A COMPARISON BETWEEN REAL PROPERTY ACCOUNTING PRACTICES IN THE UNITED STATES NAVY AND GENERALLY ACCEPTED ACCOUNTING PRINCIPLES

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THESIS

A Comparison Between
Real Property Accounting Practices
in the United States Navy and
Generally Accepted Accounting Principles

by

Robert John Degon

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A Comparison Between Real Property Accounting Practices in the United States Navy and Generally Accepted Accounting Principles

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This thesis compares real property accounting practice in the United States Navy with generally accepted accounting principles. Major differences are summarized. Economic analysis of real property investment alternatives is discussed. Primary emphasis is placed on the field level use of economic analysis in the Navy, and comparisons are made with economic analysis methods utilized in the private sector. Using determined accounting differences, valuation of real property in the Navy is compared to that in the private sector. The use of real property accounting data in economic analysis is discussed. Navy decisions dependent upon real property replacement values are considered with respect to Navy accounting practice.

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I. INTRODUCTION

This thesis examines Navy real property accounting practice and compares it to generally accepted accounting principles. The author believes that there is a common belief among Navy managers that no significant differences exist. This belief can be documented in discussing Navy accounting in general by a quotation from a Navy publication.

> Generally accepted accounting principles, adherence to NAVCOMPT and other prescribed accounting standards will be satisfied because the system has these elements as intrinsic components of the operation. /Ref. 24, p. 3/

A portion of the "system" being described is the Real Property Inventory (RPI) of the Navy.

The position taken by the author is that significant differences do exist. Further, these differences, not being fully recognized, may have a significant effect on Navy management of real property assets. To this end, a literature search has been conducted to determine generally accepted accounting principles and Navy accounting practices for real property. Further investigation was conducted to discover those areas in which the real property data base of the Navy is utilized by the manager. These are examined in light of discovered accounting differences.

To place Navy real property in perspective, the following statistics, which were current as of October 1974, were supplied by the Facilities Support Office of the Naval Facilities Engineering Command:

1. Seven-hundred and eighty-five activities report real property.

2. There are over 180,000 property records for Navy land, buildings, structures, and utilities.

3. There are 5,000 items of real property for which the Navy is the lessor and 8,000 items for which the Navy is the lessee.

4. Navy land has a recorded historical acquisition cost of 339 million dollars.

5. Navy buildings, structures, and utilities have a recorded historical acquisition cost of 12 billion dollars and a current calculated replacement value of 43.5 billion dollars. Considering the obvious magnitude of Navy real property holdings, differences in Navy accounting procedures from private practice based on generally accepted accounting principles could result in gross lack of comparability when conducting analysis of Navy and private sector real property.

Chapter II discuses briefly the approaches and limitations of the thesis with respect to accounting. Generally accepted accounting principles, as used in this thesis, are

defined. The Navy real property accounting system is briefly discussed.

In Chapters III through VI, accounting comparisons are made. These are made on an item by item basis, and a summary of major differences discovered ends each chapter. Chapter III covers general considerations. Chapter IV discusses real property acquisitions. Chapter V discusses subsequent capital investments in existing real property holdings. Chapter VI covers dispositions of real property.

In Chapter VII, as a prelude to analysis of how real property accounting practice in the Navy might affect management decisions, economic analysis of Navy real property investment decisions is compared to economic analysis conducted by private enterprise. Chapter VIII looks at the possible effects of Navy real property accounting practice. First, the valuation of real property assets is considered. Second, economic analysis and real property accounting data requirements are then discussed. Finally, those management areas in the Navy requiring use of replacement values are considered in light of differences in real property valuation. Chapter IX provides a brief summary and some concluding remarks.

II. APPROACH AND LIMITATIONS

For this thesis, "real property" is limited to those types of plant assets for which the Naval Facilities Engineering Command (NAVFAC) has the accounting responsibility. Therefore, the real property assets to be considered are (1) land and (2) buildings, structutes, and utilities. The Navy considers land to be a Class 1 real property asset. Buildings, structures, and utilities are considered to be Class 2 real property assets. For purposes of this thesis the private sector will be considered to be the collective grouping of corporate and unincorporated entities (partnerships and single proprietorships) which require real property assets in the conduct of their normal operations. The term "utilities," for purposes of this thesis, includes items such as power poles and sewer systems included in real property holdings. Further, Navy real property held by reserve, commercial-industrial, and Navy Industrial Fund (NIF) activities is not considered.

Generally accepted accounting principles are considered to be the governing factors of private sector real property accounting. No survey was conducted to determine practices actually followed. However, surveys conducted, such as Accounting Trends & Techniques [Ref. 11] indicate a high

degree of correlation between generally accepted accounting principles and actual accounting practice. To determine generally accepted accounting principles a literature search of accounting textbooks and American Institute of Certified Public Accountants (AICPA) publications was conducted. The extent of this search was sufficient to establish a consensus on all principles discussed. While certain shortcomings of current generally accepted accounting principles are frequently covered in the literature, and many alternatives to the present system are set forth, these were set aside. The author was only concerned with that which is generally accepted at this time.

Navy real property accounting is conducted by two separate entities. The first is the Comptroller of the Navy, who, through Authorized Accounting Activities (AAA), performs the traditional "bookkeeping." The AAAs are concerned with the debits and credits of a double-entry system. The second is NAVFAC, which maintains the Real Property Inventory (RPI). The RPI, which contains only debit entries is concerned with asset valuation, not with which account a piece of real property is charged against. Since the RPI is the decision-maker's tool in the real property area, it receives the attention of this thesis. The debit entries at the AAA are, however, reconciled with those of

the RPI. Since the emphasis will be placed on the RPI, discussion of generally accepted accounting principles will necessarily focus on the subject of asset valuation.

III. REAL PROPERTY ACCOUNTING

Real property accounting in private sector practice and in the U.S. Navy has many facets which apply to both land (Class 1) and to buildings and structures (Class 2). These facets receive much attention in the literature, and since they are primarily of a general nature and apply to numerous transaction situations, this chapter will deal with them before covering the more specific areas of acquisitions, subsequent capital investments, and dispositions in the succeeding three chapters, respectively. The five topics to be discussed are as follows:

- the nature and purpose of real property accounting
- depreciation accounting
- real property accounting records
- indices and replacement value
- revaluation of real property assets

A. GENERAL

1. Generally Accepted Accounting Principles

The Accounting Principles Board (APB) of the American Institute of Certified Public Accountants (AICPA) states that the basic purpose of financial accounting is to provide quantitative financial information about an enterprise which is useful in economic decision-making /Ref. 1, p.221/.

Since this applies to financial accounting in general, it applies to real property accounting in particular.

Generally accepted accounting principles discussed by Paul Grady /Ref. 15/ which appear to be particularly applicable to real property accounting are the going concern, monetary expression in accounts, consistency, objectivity, materiality, and timeliness.

In Principle C-2, Grady summarizes the principles of generally accepted accounting practice /Ref. 15, p. 252/ for real property:

. Assets are carried at historical cost based on cost of acquisition.

. Land accounts are separate from other real property accounts.

. Construction costs include all costs incurred.

. To qualify as a real property asset, an expected economic life of more than one year is required.

. Criteria are necessary to distinguish among capital expenditures, operating expenses, and maintenance expenses with consistency.

. Real property no longer in service should be removed from real property accounts. This allows the accounts to reflect only the cost of properties in service.

2. Department of the Navy Practice

Real property accounting procedures for the U.S. Navy are set forth by the Comptroller of the Navy. These procedures are designed to comply with the statutory requirements of Title 10 U.S. Code 2701(a) and to meet the

objective of providing factual information on capital property for management and technical purposes /Ref. 45, p. 6-3/. The accounting for all real property is carried out on both a quantitative (i.e., physical unit) and a monetary basis.

The accounting functions for Class 1 and Class 2 real property have been assigned to the Naval Facilities Engineering Command (NAVFAC) by the Comptroller of the Navy. The NAVFAC has integrated these accounting functions into its management information system, which is maintained by the Facilities Support Office (FACSO) in Port Hueneme, California.

Data requirements and reporting procedures are set forth in the Navy Facilities Assets (NFA) Data Base Manual /Ref. 36/. In addition to meeting the statutory requirements, the NFA is essential to Shore Facilities Planning (SFP) which compares quantitative asset holdings with asset requirements to determine real property excesses and deficiencies. The SFP is an integral part of the Department of the Navy Planning Programming Budgeting System (PPBS).

The primary objectives of real property accounting according to the NAVFAC /Ref. 36, p. 1-1/ are considered to be:

. provision of responsive output in the form of reports and records

. minimization of duplication of information

. standardization and streamlining of reporting procedures and data collection

. maximization of the quality of future data

. maintenance of reconciliation of plant/property records with those of the Comptroller of the Navy

B. REAL PROPERTY DEPRECIATION ACCOUNTING

1. Generally Accepted Accounting Principles

The AICPA /Ref. 45, par. 5c/ considers depreciation accounting to be a process of allocation and not one of asset valuation. Its aim is to distribute the cost of real property assets over the estimated useful life of the asset.

The application of depreciation accounting in the private sector as stated by Grady in Principle C-3 /Ref. 15, p. 259/ is necessary to charge current operations with the investment in depreciable assets over the life of the assets. Thus, fixed assets will be reduced over time by increases in accumulated depreciation allowances.

Land is, in general, non-depletable and non-depreciable. However, its physical permanence does not imply stability in value /Ref. 43, p. 359/. Losses in value may justifiably result in a downward revaluation of the asset account, but this is not done through depreciation /Ref. 50, p. 478/. Mineral rights, agricultural land, and easement costs may be depleted /Ref. 9, p. 15-4, 15-5/.

Land improvements, buildings, structures and utilities which all have a limited useful life are depreciated. This is an operating expense /Ref. 50, p. 185/, is charged over the period of asset utilization /Ref. 12, p. 339/ and is based on historical cost less any future salvage value /Ref. 43, p. 233/.

2. Department of the Navy Practice

The Department of the Navy does not use depreciation accounting for real property except when used in determining full costs of services performed in certain revolving fund activities.

The fact that the Navy does not use depreciation accounting does not mean that there are no arguments for its use. George A. Gustafson /Ref. 17, p. 59/ argues that depreciation accounting is required of governmental units in order that the full cost of benefits provided be shown.

C. REAL PROPERTY ACCOUNTING RECORDS

1. Generally Accepted Accounting Principles

William A. Paton states that real property deserves a systematic and detailed accounting /Ref. 43, p. 228/. To accomplish this accounting, unit property records are essential for detail, with general ledger accounts for control purposes /Ref. 20, p. 454/. These unit records,

according to Livingstone, should also include provision for information concerning subsequent capital investment /Ref. 9, p. 17-34/. In order that periodic appraisals would be easier, these subsequent capital investments should be dated.

The general purposes of accounting records are set forth by Livingstone /Ref. 9, p. 17-22/:

. to form a basis for management reports and financial statements

. for internal control (primarily inventory and audit)

. to facilitate insurance claims

. to show location of assets and to support their valuation

2. Department of the Navy Practice

The Navy Comptrollers Manual /Ref. 8, p. 6-31/ states that each individual item of real property will be reported for inclusion in the accounting records. This reporting is to apply to all acquisitions regardless of their nature and regardless of the source of funds utilized.

Each item of Navy real property has a property record card. These individual cards are held by the reporting activity; however, the entire inventory of Navy real property is contained on magnetic tape at the FACSO, forming the heart of the NFA data base /Ref. 36/. This

data base contains both physical and monetary data. With respect to physical data, a very complete inventory and physical characteristics data base is maintained. However, the monetary records are extremely limited, consisting of three major items:

- the date of original acquisition
- the date of the most recent capital investment
- one monetary figure which is the sum of the original acquisition cost and all subsequent capital investments.

This simplified recording of monetary information makes determination of replacement values less accurate than in the private sector.

D. REPLACEMENT VALUE AND INDICES

Replacement value (cost) represents the total cost of construction that would be required to replace a facility in kind (same type of construction and same utility). This value reflects current costs for such items as labor, materials, and construction equipment. Replacement value is not a current dollar figure. Current dollar figures are historical costs inflated to reflect the current value of the dollar with respect to the value of the dollar at the time of acquisition. The Gross National Product Price Deflator and the Consumer Price Index are commonly used in determining current dollar figures /Ref. 18, p. 39/. Indices used for

calculating replacement values will be discussed in the following two sections.

1. Generally Accepted Accounting Principles

Indices are often utilized in determining an asset's replacement value as a function of its historical cost. It should be recognized that these replacement values are only approximations and contain many inaccuracies unless the application is fairly specific /Ref. 18, p. 57/. Indices commonly used in the private sector are those by the Turner Construction Company, the Engineering News Record, and E. H. Boeckh Associates /Ref. 23, p. 32/.

It must be recognized that replacement value is supplemental information only, used for financial decision-making /Ref. 50, p. 240, 241/. Real property asset accounts are not changed from their historical basis to reflect replacement value.

2. Department of the Navy Practice

The index used by the Navy with respect to real property is a modification of the Marshall Stevens Index (MSI). The MSI is updated quarterly and is computed for three areas of the United States (Eastern, Central, and Western) and four types of construction (fire-proofed steel frame, reinforced concrete, masonry bearing walls, and open frame steel or wood). The index reflects current costs

of labor, materials, supervision, contractors' profit and overhead, design, and taxes and insurance /Ref. 23, p. 30/. NAVFAC averages, on an annual basis, the values for the three areas of the U. S. and the four types of construction to arrive at three indices for permanent, semipermanent, and temporary construction.

This index is used as a multiplier to convert the current carrying cost of a Class 2 facility to a replacement value. The index value used is in part determined by the date of acquisition. However, since subsequent capital investments are not dated (except for the most recent) nor are their costs shown (or known), the results cannot be considered wholly satisfactory. The resulting replacement values calculated are reported annually in the Detailed Inventory of Naval Shore Facilities /Ref. 26/. The use of replacement values is primarily in maintenance budgeting.

E. REVALUATION OF REAL PROPERTY ASSETS

1. Generally Accepted Accounting Principles

Revaluation is the changing of the original basis of recording an asset. New values replace the historical cost with the recognition of a gain or a loss. With respect to revaluation, the APB in Opinion No. 6 /Ref. 11, p. 11/ states that real property should not be revalued upward to reflect a market or appraised value. However,

when book value is greater than salvage value and further expected returns are minor (permanent loss in value), a real property asset should, justifiably, be revalued downward /Ref. 50, p. 298/.

When the economic life of an asset or its salvage value change, the changes are reflected in the accumulated depreciation account, not in the asset account/Ref. 20, p.511/.

2. Department of the Navy Practice

The Department of the Navy does not subscribe to a policy of asset revaluation, either upward or downward, under any circumstances. This conclusion is drawn by negative inference as neither the Navy Comptrollers Manual /Ref. 8/ nor the Navy Facilities Assets (NFA) Data Base Manual /Ref. 36/ consider the subject.

F. SUMMARY OF MAJOR DIFFERENCES

1. Private enterprise accounts for real property to provide financial and quantitative information about itself. While the U. S. Navy in following statutory requirements meets the same objective, its primary purpose is to provide responsive output in the form of records and reports for the Shore Facilities Planning function.

2. The U. S. Navy does not use depreciation accounting.

3. The U. S. Navy accounting records are less detailed

with respect to subsequent capital investment than are those in the private sector.

4. Whereas both the U. S. Navy and private enterprise use indices to determine replacement value, the Navy does not use the resulting values for economic decision-making. The values determined by the Navy contain serious error both from the general application of the indices and from the lack of cost detail in the accounting records.

5. Whereas private enterprise will revalue assets downward to reflect a permanent loss in value, the U. S. Navy does not change the historical basis of recording real property under any circumstances.

IV. REAL PROPERTY ACQUISITIONS

Accounting for real property acquisitions is primarily a problem of valuation. This problem is especially true in private enterprise where over or understatement of asset value has a detrimental effect on both balance sheet and income statement presentations. This chapter will deal with the various methods of acquiring both Class 1 (land) and Class 2 (buildings and structures) real property assets. These two classes will be discussed separately since the methods of valuation differ somewhat. However, there are some general considerations that apply to most (if not all) types of acquisitions, and these will be addressed first.

A. GENERAL CONSIDERATIONS FOR REAL PROPERTY ACQUISITIONS

1. Generally Accepted Accounting Principles

There is agreement in the literature that real property assets are initially recorded at historical acquisition cost or its equivalent /Ref. 9, p. 17-17, Ref. 18, p. 26, 27, Ref. 19, p. 84, and Ref. 50, p. 489/. While there are proposals for subsequent changes in the asset accounts to recognize current value of real property, none are generally agreed upon. The historical cost figure recorded is only valid on the date of acquisition, as after that time the value is only a historical record and not a

valuation of the asset's current worth. The date of acquisition is the effective date of title transfer. Fair market value is a term commonly used in connection with acquisition valuation. When an asset is purchased, its cost is the best evidence of its fair market value /Ref. 43, p. 281, and Ref. 50, p. 482/. In most cases, any interest, explicit or implicit, in the purchase price is not capitalized /Ref. 9, p. 17-18, and Ref. 19, p. 84/. However, interest charges may be capitalized during the construction period of a real property facility.

The real problems in asset valuation arise when the acquisition is not for cash or the transaction is not at "arms length." In these cases the fair market value of the asset acquired, determined by the most reliable means, should be the basis for valuation /Ref. 2, p. 6805, Ref. 43, p. 291. and Ref. 50, p. 528/. For example, an independent appraisal could be used as a measure of the fair market value. In any case the cost or fair market value should include all outlays required to put the asset in condition for its intended use. /Ref. 9, p. 17-17/.

On many occasions acquisitions are of the "basket-type." This situation is one in which a combination of land, buildings and structures are acquired as a group. However, the separate assets in the group are to be recorded as individual

real property assets in the accounting records. This case is especially common when a building or structure is purchased, as land is almost always involved. In these situations care must be taken to allocate to each individual real property asset its portion of the acquisition cost in an equitable manner. The allocation is usually done on a relative basis using ratios determined from fair market values or appraisals. /Ref. 15, p. 254, Ref. 9, p. 17-21, and Ref. 19, p. 84/. The total costs allocated to the individual assets must equal the total acquisition cost or its equivalent.

2. Department of the Navy Practice

The department of the Navy, as in the private sector, uses the historical cost approach in recording real property acquisitions. However, the determination of this historical cost departs from private practice in several different situations. The most notable of these are land acquisition by purchase and all acquisitions not on a cash basis — for example, acquisition by donation. These will be discussed in subsequent sections of this chapter.

Government (Navy) cost is, in general, based on cost documents /Ref. 36, p. 204-A/. That is, all costs that are directly attributable to an acquisition are based on vouchers. This procedure means that, if there is no cash

outlay or if there is a cash outlay not directly attributable to an acquisition, the real property account will not reflect the fair market value of the acquisition. For example, if an asset is discovered through inventory or engineering evaluation and its original acquisition basis is not known, it is recorded at zero dollars /Ref. 36, p. 2-2/.

The date of acquisition is considered to be at beneficial occupancy, useable completion, or transfer of title, whichever occurs first /Ref. 8, p. 6-31/. In addition, a piece of real property is considered to be acquired when ingranted (in general, leased) or when owned by the U. S. Government and assigned to an activity in the Department of the Navy /Ref. 36, p. 2-1/. Initial reporting of an acquisition primarily involves physical data to support Shore Facilities Planning (SFP). Of up to 59 initially reportable data elements, only two can be considered true accounting data: date and cost /Ref. 36, p. A-1/.

With respect to "basket" acquisitions, the Navy Comptrollers Manual /Ref. 8, p. 6-35/ requires that the total acquisition cost be allocated to each individually reportable asset on an estimated cost basis with the total of the individual costs not to exceed the aggregate cost. Fair market value is not mentioned in this situation.

The estimated cost may be a government estimate based on historical data or appraisal or, in the case of a contract, the contractor's estimate which is his basis for the contract price.

B. LAND ACQUISITION

1. Land Acquisition in General

a. Generally Accepted Accounting Principles

The carrying value of land consists of all expenditures made to acquire the land and to put it in condition for the use intended. Any salvage proceeds in preparing the land for use are treated as a reduction of original cost /Ref. 9, p. 4, 5/. The inherent assumption is that land will be used in current and future operations. Land held for possible future use or sale is recorded as an investment, not as a real property asset /Ref. 20, p. 450/.

Karrenbrock and Simons and Paton agree that interest during the development of land may be capitalized /Ref. 20, p. 451 and Ref. 43, p. 369/. Land improvements which deteriorate should not be included in the land account but should be accounted for separately and depreciated /Ref. 9, p. 15-5/.

b. Department of the Navy Practice

Land is carried at acquisition cost; however, as will be seen in the next section not all costs are

included. In addition, interest expense is not capitalized, and salvage proceeds are not treated as a reduction in original cost.

2. Land Acquisition Through Purchase

a. Generally Accepted Accounting Principles

Acquisition costs include the price paid to the seller and all other costs incurred. These include but are not limited to /Ref. 20, p. 449, 450, and Ref. 43, p. 360/:

commissions	grading	special assessments
title fees	filling	clearing
escrow fees	subdividing	draining
survey fees	demolition (less salvage)	
structure removal	prior tax obligations	

If land is purchased on a contract basis, it should be treated as an outright purchase. Interest (explicit or implicit) should be expensed /Ref. 43, p.361/.

b. Department of the Navy Practice

Acquisition cost is simply the price paid for the land /Ref. 8, p. 6-34/. Other costs incurred are charged to expense. However, if new construction is accomplished in conjunction with the land acquisition, these other costs are capitalized as part of the cost of construction.

3. Land Acquisition Through Donation or Transfer

a. Generally Accepted Accounting Principles

A true donation, one with no strings or contingencies attached, is considered for this case. Land

so received is recorded on the books of the receiving enterprise at its fair market value as of the effective date of the donation/Ref. 9, p. 15-7/. Paton /Ref. 43, p. 363/ suggests appraisal value; however this is only a means of determining fair market value. Incidental costs, as for purchases, are also capitalized. Transfers, as such, are unknown except within an organization and will not be considered for the private sector.

b. Department of Navy Practice

According to the Navy Comptrollers Manual /Ref. 8, p. 6-34/, donations are only from a source other than another federal agency and are without expenditure of federal funds. Donated property is recorded at no cost.

When land is received from other federal agencies or other activities within the Department of the Navy, it is considered to be a transfer. Transferred land is recorded on the books in the amount shown on the transfer document, which is the historical acquisition cost of the transferring activity. No appraisal or fair market value is involved.

4. Land Acquisition Through Exchange for Securities

a. Generally Accepted Accounting Principles

Paton /Ref. 43, p. 563/ and Chenok /Ref. 9, p. 15-6/ agree that the more objective determination of

either market value of securities exchanged or fair market value of land received should be entered in the land account. Market value of securities is usually readily obtainable, but, if it is not, fair market value of the land is used. Incidental expenditures are, again, capitalized.

b. Department of the Navy Practice

Exchange of securities for land is not an acquisition method in the U. S. Navy.

5. Land Acquisition Through Exchange for Other Land or Assets

a. Generally Accepted Accounting Principles

The recording of land acquired through exchange is at the fair market value of the asset traded /Ref. 43, p. 364/. A gain or loss on the exchange is recognized. In some cases the fair market value of the land acquired may be a better indicator of acquisition value /Ref. 9, p. 15-7/.

b. Department of the Navy Practice

While exchanges are based on appraised value of the assets involved in order that an equitable trade results, the appraisal value is not the basis for recording the asset. Rather, the land received is recorded either at no cost, since no funds were expended, or at the historical cost of the asset traded.

6. Land Acquisition Through Ingrant

An ingrant is a use agreement. Common terms are lease, right-of-way, and easement. For purposes of this thesis, leases will be considered as the general case.

a. Generally Accepted Accounting Principles

Generally only leases of a long-term nature and which are not unilaterally cancellable are considered to be an acquisition. These leases are, in essence, long-term purchase contracts and are treated as purchases /Ref. 43, p. 359/. Implicit interest is not capitalized, therefore a discounted value of future lease payments is considered to be the acquisition cost. More specifics as to when a lease is considered to be a contract purchase will be given under Class 2 acquisitions.

Other ingrants are usually not considered to be acquisitions and are not recorded as real property assets. Rent payments are expensed on an accrual basis.

b. Department of the Navy Practice

Ingrants, regardless of type, are considered as acquisitions for inventory purposes (physical measurement of real property) but are recorded at no cost. Property records indicate type and term of the ingrant, rental payments (expenses) and appraised value of the ingranted property. This area is discussed throughout the NFA Data Base Manual /Ref. 36/.

C. CLASS 2 ACQUISITIONS

1. Class 2 Acquisitions in General

a. Generally Accepted Accounting Principles

The initial basis for recording Class 2 real property is cash or equivalent cost and includes all costs to put the asset in a usable condition /Ref. 20, p.440 and Ref. 43, p. 225/. Class 2 assets are depreciable, and the book value at any time is the historical cost less accumulated depreciation.

Building appurtenances (for example, elevators, lighting systems, and boilers) are usually recorded separately as "building equipment" or "building improvements." These assets may be fixed or removable and are depreciated over the life of the building or a shorter period as applicable /Ref. 20, p. 452/. This separate accounting for appurtenances becomes important when assets are replaced in a future time period and will be discussed in the next chapter.

b. Department of the Navy Practice

The majority of acquisitions in the U. S. Navy are through the Military Construction (MILCON) Program, usually through construction contracts. However, the other methods of acquisition discussed for land and self-construction are also common. The initial basis for recording a Class 2 acquisition is the amount of funds expended.

With regard to appurtenances the Navy Comptrollers Manual /Ref. 8, p. 6-29/ states that any system which is an integral part of a facility and is permanently attached is considered a part of the facility. Examples are heating systems, electrical systems, fire protection systems, elevator shafts and elevators, water systems, and sewage systems. Since no separate accounting is done for these systems, accounting for replacements becomes a difficult chore. This situation will be discussed in the next chapter.

2. Class 2 Acquisitions Through Construction Contract

a. Generally Accepted Accounting Principles

The acquisition cost of a Class 2 facility by construction contract includes not only the contract price but all costs associated with the acquisition. Some possible costs based on several sources are listed below /Ref. 15, p. 255, Ref. 9, p. 17-19, Ref. 20, p. 451, and Ref. 43, p. 227, 228/:

- surveying
- architect/engineering fees
- supervision of construction
- construction services
- excavation
- insurance during construction
- demolition of existing structures (less salvage)
- payments for cancelled leases
- permits and privileges
- depreciation of equipment during construction
- temporary roads and structures
- minor claims for damages
- taxes during construction
- interest during construction (in some cases)
- field engineering and inspection

Advance payments and progress payments to contractors are not considered real property assets until title to the property passes to the buyer. Prior to the passing of title, these are claims on the contractor. /Ref. 9, p. 17-19/.

b. Department of the Navy Practice

Navy construction contracts are of two kinds: (1) those administered by an Engineering Field Division (EFD). and (2) those administered at the activity level, usually by the Public Works Officer (PWO), who may have the title, Officer in Charge of Construction (OICC).

With respect to EFD administered contracts /Ref. 8, p. 6-35/, the acquisition cost is the total of all expenditures from appropriated and non-appropriated funds to include, over and above the contract price, the following:

1. removal, relocation, or destruction of buildings or structures to enable construction

2. surveying, architect engineer fees, site preparation, excavation, filling, landscaping, erosion control, and other land improvement specifically associated with construction

3. obtaining and preparing preliminary engineering reports.

As stated in the reporting procedures for the NFA Data Base /Ref. 36, p. 2-2/, acquisition costs include all payments to the contractor, design costs, overhead allowed, and all incidental costs directly attributed to the project by work request. Overhead charges are based on Supervision, Inspection and Overhead (SIOH) which is currently calculated

at six per cent of the contract price. Other incidental costs must be directly attributable to the project by job order number. General and administrative overhead are not included in the acquisition cost.

When a contract is administered by the PWO, only the contract price is included in the acquisition cost. No overhead is allowed unless SIOH is transferred to the EFD for engineering and inspection support.

3. Class 2 Acquisitions Through Purchase (Not by Construction Contract)

a. Generally Accepted Accounting Principles

This situation is much the same as for land purchase. All expenditures up to the day the asset is useable for the purpose acquired are included in the acquisition cost /Ref. 15, p. 254 and Ref. 20, p. 441/. If a used asset is purchased, it should be recorded at cost, not at the book value of the seller /Ref. 20, p. 442/. If deferred payments are involved, any interest charges must not be capitalized /Ref. 20, p. 443/. Usually land will be included in a Class 2 purchase and must be separated as discussed earlier under "basket purchases."

b. Department of the Navy Practice

Similar to a construction contract, acquisition cost for a purchase includes all funds expended and directly attributable to the purchase.

4. Class 2 Acquisitions Through Self-Construction

a. Generally Accepted Accounting Principles

All literature reviewed is in agreement that labor and materials should be included in the acquisition cost. An area of conflict is readily apparent in the application of overhead. Opinions range from charging no overhead to the charging of a portion of all overhead, variable and fixed, to the construction effort. Application of overhead is definitely judgmental in nature; however, the charging of increases in overhead directly attributable to the construction is the most common philosophy /Ref. 9, p. 17-20, Ref. 19, p. 87, and Ref, 20, p. 446/. The handling of interest during construction ranges from no charge at all /Ref. 19, p. 88 and Ref. 50, p. 89/ to charging interest only on funds borrowed during the construction period /Ref. 15, p. 254/. Hylton /Ref. 19, p. 88/ states that taxes during construction should not be recognized as a capital expenditure, while other authors would capitalize them.

The case may arise where the cost of self-construction grossly exceeds fair market value /Ref. 19, p. 88 and Ref. 20, p. 448/. If a facility is constructed for less that its fair market value, a gain on self-construction should not be recognized. On the other hand, if the self-construction costs are higher than the fair market value, a loss is recognized, and the asset is recorded at fair market value.

b. Department of the Navy Practice

Self-construction in the U. S. Navy is accomplished by two methods (self-help programs excluded): (1) by the Naval Construction Force (NCF), SEABEES, or (2) by station forces, public works personnel. These two methods concern primarily the source of labor. In neither case is overhead of any kind included in the acquisition cost. Fair market value is not considered. The acquisition cost when NCF is used is the direct cost of materials plus a statistical charge for SEABEE labor /Ref. 8, p. 6-34/. When station forces are utilized, the acquisition cost includes direct labor and materials plus a percentage of the direct labor charge to cover fringe benefits (vacation, sick leave, etc.). The percentage is determined by the activity comptroller and is generally very close to 30 per cent.

5. Class 2 Acquisitions Through Donation or Transfer

a. Generally Accepted Accounting Principles

The proper method of recording a donation is at fair market value, not at the book value of the donor /Ref. 15, p. 254, Ref. 9, p. 17-21, Ref. 19, p. 89, and Ref. 43, p. 226/. This value must be obtained by appraisal since no cost basis is available /Ref. 43, p. 292, and Ref. 20, p.448/. To ignore the fair market value of a donated asset is to disregard the benefits the asset can provide in future operations

/Ref. 9, p. 17-21, and Ref. 50, p. 527/. Similarly, if an asset is purchased at a "bargain" price, it should be recorded at fair market value with the excess over cost treated as a donation /Ref. 50, p. 527/.

b. Department of the Navy Practice

A donation is recorded at no cost. However, an annual appraisal of the property, recorded separately, is required by law /Ref. 8, p. 6-36/.

Transfers of property from other Navy activities, other military departments, and other federal agencies are recorded at the historical cost from the transferring agency's records /Ref. 8, p. 6-36/.

6. Class 2 Acquisitions Through Exchange for Securities

a. Generally Accepted Accounting Principles

Record the asset acquired at the market value of the securities exchanged. If this value is not known, the acquisition cost recorded should be the fair market value of the asset acquired. This value should be determined by an independent party /Ref. 15, p. 254, Ref. 9, p. 17-22, Ref. 20, p. 445, and Ref. 43, p. 225/.

b. Department of the Navy Practice

Exchange of securities for Class 2 assets is not an acquisition method in the U. S. Navy.

7. Class 2 Acquisitions Through Exchange for Other Assets

a. Generally Accepted Accounting Principles

The acquisition is recorded at the fair market value of the asset traded or received. One of the two will be a better indicator of asset value. A gain or loss on the transaction is recognized /Ref. 9, p. 17-22, Ref. 20, p. 443, and Ref. 43, p. 292/. In practice, according to the AICPA, book value is often used to record the new asset. This practice results in an understatement of the asset value /Ref. 15, p. 254/.

b. Department of the Navy Practice

This situation is handled exactly the same as for acquisition of land through the exchange for other assets, section IV. B. 5. b.

8. Class 2 Acquisitions Through Ingrant

As stated before, an ingrant is a use agreement. A lease will be used as the general case.

a. Generally Accepted Accounting Principles

Either of two methods are used to record an acquisition by lease /Ref. 2, p. 6524 and Ref. 9, p. 23-3/: (1) the treatment of the lease as an installment purchase or (2) the treatment of the lease as a rental.

The treatment of a lease as an installment purchase is based on the condition that a lessee will build up

an equity in the property as rental payments are made. The terms of the lease must be for a definite future period, and the lease must be, in general, non-cancellable. Implicit interest charges are not capitalized. Otherwise, a lease is treated as a rental with the recognition of the rental payments as current operating expenses.

b. Department of the Navy Practice

All ingrants are considered to be Navy controlled property and are included in the property records for physical inventory. However, the ingranted facility is not recorded as an acquisition for financial purposes, all rent payments being expensed in the period paid. /Ref. 36, p. L-2/. An estimated value of the ingranted facility is commonly included in the property record.

D. SUMMARY OF MAJOR DIFFERENCES IN ACCOUNTING FOR ACQUISITIONS

1. Whereas Generally Accepted Accounting Principles (GAAP) make extensive use of fair market value, the Department of the Navy (Navy) does not.

2. Whereas GAAP only recognizes land used in current operations and with a continuing future use as a real property asset, the Navy considers all land, in use or not, as a real property asset. Other land in the private sector is usually treated as an investment.

3. Whereas under GAAP, the cost of land acquisition includes all incidental costs, Navy practice allows capitalization of only the purchase price. All incidental costs are expensed.

4. Whereas under GAAP, donations of land, buildings, and structures are recorded at fair market value, the Navy records these assets at no cost (zero dollars).

5. When real property assets are transferred from non-Navy, federal agencies, the Navy records the acquisition at the carrying value of the prior owner. No gain in real property value is recognized.

6. Whereas GAAP records real property assets received through exchange at the fair market value of the asset received or the asset traded, the Navy records these acquisitions at the historical cost of the asset traded or in some cases, at no cost.

7. Whereas under GAAP, ingrants of real property may be recorded as a contract purchase and capitalized, the Navy records all ingrants as physical acquisitions on a no cost basis, and all rent payments are expensed.

8. Whereas GAAP suggests that building appurtenances be separately recorded to facilitate future replacement accounting, the majority of appurtenances in Navy-owned buildings are included as part of the total asset.

9. Whereas GAAP includes all contract costs in a contract purchase, some Navy acquisitions are recorded at contract price, not recognizing any overhead or other incidental costs.

10. Whereas GAAP advocates that some overhead be applied to self-constructed real property assets, the Navy capitalizes only materials and labor.

V. SUBSEQUENT CAPITAL INVESTMENTS

Subsequent capital investments are those expenditures which increase the recorded acquisition cost of a real property asset. In some cases accumulated depreciation may be reduced, or the economic life may be increased. Land remains relatively unchanged in the accounts from the date of acquisition, but there are many ways in which the recorded costs of Class 2 (buildings and structures) real property may be increased. Revaluation, as discussed in Chapter III, may only reduce the recorded cost of a real property asset.

A. SUBSEQUENT CAPITAL INVESTMENT -- LAND

1. Generally Accepted Accounting Principles

Most subsequent capital investments concerning land are considered to be land improvements and are accounted for as Class 2 property. Other expenditures are recurring in nature and are treated as expenses. Examples of this would be weed control or brush clearing. However, for improvements such as reshaping or permanent drainage systems, the historical cost basis is increased.

2. Department of the Navy Practice

Land is carried at historically recorded cost until disposal. Improvements are either expensed or are added to a class 2 account /Ref. 36, p. 403-A/.

B. SUBSEQUENT CAPITAL INVESTMENTS -- CLASS 2 REAL PROPERTY

1. General Discussion

a. Generally Accepted Accounting Principles

Class 2 real property value is increased by improvement, betterment, rehabilitation, reconditioning, restoration, leasehold improvements, alteration, addition, and replacement. Many of these terms are analagous and are used in accordance with a particular author's preference. All have one thing in common; they are accomplished by construction. In addition, maintenance and repairs, normally expensed, may be considered as a capital investment in certain situations.

b. Department of the Navy Practice

Class 2 real property value is increased by conversion, addition, expansion, extension, alteration, and replacement. Words such as improvement and betterment are not used /Ref. 6, p. 3-2/. While there is little correlation between descriptors of subsequent capital investment in the private sector and in the Navy, the common denominator is that they all involve construction. Asset life and/or utility are increased. As in private practice, there are occasions when maintenance and repair are considered to be capital expenditures.

2. Subsequent Capital Investments -- Construction

While construction is usually involved in all subsequent capital investments, its use in this section does not apply to complete replacements, and maintenance and repair. Construction is used to collectively describe additions, extensions, alterations, etc.

a. Generally Accepted Accounting Principles

All costs of restoration or rehabilitation (less salvage) are included in the historical acquisition cost if the rehabilitation was conducted at or shortly after the time of acquisition. This practice assumes that the condition of the asset was known at the time of acquisition /Ref. 9, p. 17-34, Ref. 43, p.237/.

For construction subsequent to initial acquisition which is, in fact, a true improvement (increases life and or utility of the asset), the real property accounts must take several factors into consideration /Ref. 20, p. 238/:

1. The real property asset account must be decreased for old assets removed.

2. The cost of removing the old assets (less salvage) is an expense.

3. The life of the new asset constructed usually assumes the remaining life of the original asset.

4. Only the costs applicable to the new asset are added to the real property account. These costs are capitalized and depreciated /Ref. 9, p. 17-34, Ref. 20, p. 455, and Ref. 43, p. 239/.

A careful segregation of true capital expenditures must be made /Ref. 9, p. 17-32, Ref. 43, p.231/, and care must be taken to avoid charging an expense as a capital investment and vice-versa /Ref. 43, p. 239, 242, and Ref. 50, p. 518/.

In many cases it is not practicable to remove the cost of old assets removed, regardless of any theoretical justification /Ref. 12, p. 331/. This situation is the case when sufficient accounting data are not available to make a cost determination, and it results in an overstatement of asset value.

Leasehold improvements may be capitalized /Ref. 9, p. 17-33 and Ref. 43, p. 241/. If the improvements are to remain the property of the lessee, they are treated as any acquisition. If the ownership will revert to the lessor, the improvements are capitalized over the remaining life of the lease.

b. Department of the Navy Practice

The Navy Comptrollers Manual /Ref. 8, p. 6-35/ states that a betterment, conversion or improvement to existing

facilities, regardless of its cost, will be entered in the property accounts. In many instances a project which is primarily a capital investment will be capitalized in the amount of the total cost because of practical problems in the segregation of expense items. This situation is especially true at the activity level where non-MILCON funds are used for the construction effort.

Where non-MILCON funds (non-appropriated, operations and maintenance, etc.) are utilized, the total cost for the construction less the original cost (usually an estimate) of the systems replaced is the cost to be entered in the real property account /Ref. 8, p. 6-35/. The cost data come from official cost documents. Where systems initially reported as part of the real property are replaced without increase in life or utility of the primary asset, the costs are expensed.

Construction on existing real property assets, when MILCON funds are utilized, is treated as an acquisition for cost determination purposes /Ref. 8, p. 6-35/. Overhead and SIOH are capitalized when MILCON funds are utilized and are expensed when other fund sources are used. Leasehold improvements are never capitalized /Ref. 36, p. 007-A/.

3. Subsequent Capital Investments -- Replacement

A replacement is a subsequent capital investment in which the construction effort is such that the original

asset is essentially or completely replaced. Replacements may arise as a result of catastrophic events but not necessarily so. Terms such as reconstruction, major rehabilitation, or major alteration are analagous to replacement. Replacement, in this section, refers to the total asset not to its components.

a. Generally Accepted Accounting Principles

A replacement is treated as a new asset, the old asset being retired. The old asset account is closed out as is any accumulated depreciation. The new real property asset is recorded at the construction cost plus the estimated cost of the portion of any old assets retained /Ref. 9, p. 17-35 and Ref. 43, p. 242/. Removal cost of old asset portions are expenses which may be reduced by any salvage proceeds /Ref. 9, p. 17-33 and Ref. 43, p. 254/.

Major renewals and replacements which result from a catastrophe are considered to be extraordinary. The cost of restoring the asset to its previous condition is an extraordinary expense. /Ref. 20, p. 455/.

b. Department of the Navy Practice

A replacement for a structure that is purposefully demolished is treated as an acquisition. However, the demolition costs of the old structure are included in the

acquisition cost /Ref. 6, p. 4-2/. A structure which is completely replaced or more than 50 per cent rehabilitated as a result of catastrophic damage is considered a replacement and is capitalized. Those facilities that are less than completely reconstructed or less than 50 percent rehabilitated are considered to be repaired, and the costs are expensed /Ref. 6, p. 2-2/.

4. Subsequent Capital Investments -- Maintenance and Repair

While true maintenance and repair are expensed, there are several cases in which maintenance and repair are considered to be capital investments. A discussion of the classification of maintenance and repairs into expense and investment categories is therefore important.

a. Generally Accepted Accounting Principles

Maintenance is an expense which is recurring and benefits current operations. A repair restores an asset to a fit condition and, if recurring, is an expense /Ref. 20, p. 454/. If large dollar volume maintenance and repair is accomplished on an irregular basis, an allowance may be set up to expense the costs over time. These items are not capital expenditures and do not change the asset valuation /Ref. 20, p. 456/.

The distinction between an expense and a capital expenditure is sometimes difficult to make. Many times minor

plant improvements are charged as an expense as an expedient measure. As long as the amounts are not material, no general misstatement of asset value will result /Ref. 20, p. 440/. In practice many companies set a policy of a dollar limit for repairs. Any expenditures below this amount are expensed /Ref. 15, p. 256 and Ref. 19, p. 92/.

A major repair or maintenance item is usually considered extraordinary and may be capitalized. While the terms maintenance and repair are used, the action may involve replacement of components /Ref. 43, p. 247/. If the action prolongs the asset life, accumulated depreciation is reduced. If the utility of the asset is increased, the historical acquisition cost is increased /Ref. 9, p. 17-27, Ref. 19, p. 92, and Ref. 20, p. 455/. In these cases, more than a repair has occurred.

b. Department of the Navy Practice

Maintenance and repair are those activities which are expected during the life of an asset in order that the asset can render its intended purpose and service. The costs are expensed as long as replacements are in kind and no change in utility or asset life occurs /Ref. 8, p. 6-30/. As discussed earlier, the costs of a partial replacement or less than 50 per cent rehabilitation are expensed as repairs.

For small activity projects, maintenance and repair projects including some capital improvements are usually entirely expensed if the capital improvements are the smaller portion of the project.

C. SUMMARY OF MAJOR DIFFERENCES IN ACCOUNTING FOR SUBSEQUENT CAPITAL INVESTMENTS

Before listing major differences, it should be noted that practical problems of determining the amount to be recorded as a subsequent capital investment are common to both the private sector and the Navy. Both sectors have set practical guidelines which are particularly necessary when the detail of the property records is limited as in the recording of building appurtenances.

The major differences are listed below:

1. Whereas subsequent capital investment in land may occur under GAAP, the Navy maintains land accounts at their original cost.

2. The Navy, as in acquisitions, does not utilize fair market values in the valuation process.

3. Whereas under GAAP, an attempt is made to charge all costs of a subsequent capital investment to the property account, the Navy charges only direct costs when non-MILCON funds are utilized.

4. Whereas under GAAP, the costs of demolition for replacement of existing facilities are expensed, the Navy

includes these costs as part of the replacement facility acquisition cost.

5. Whereas under GAAP, certain maintenance and repair items may either increase the asset value or decrease the asset's accumulated depreciation, Navy practice recognizes only increases in asset value.

6. Under GAAP, leasehold improvements may be capitalized. They are not in the Navy.

VI. REAL PROPERTY DISPOSITIONS

Real property dispositions receive less attention in the literature than do acquisitions or subsequent capital investments. This lack of attention can be attributed to the going-concern nature of both the Navy and private enterprise. Real property is acquired for long-term operations, making dispositions less common. However, dispositions do occur for various reasons and deserve the attention of this chapter.

According to Paton and Paton /Ref. 43, p. 257/, retirement may be a more appropriate descriptor than disposition. A retirement is the elimination of one or more units of real property from actual or potential service. Retirements can occur through ordinary wear and tear (uneconomical to maintain), accident, or obsolescence. A retirement may be part of a replacement transaction, or it may be without replacement. Retirements may be by sale or other transfer of property ownership, abandonment, or demolition.

A. DISPOSITION OF LAND

1. Disposition of Land in General

a. Generally Accepted Accounting Principles

In the accounting for the sale, exchange, donation, or leasing of land, the original land account is removed with proper debit entries elsewhere. Individual

peculiarities will be covered in subsequent sections. In all cases, a gain or a loss must be recognized if it is realized.

b. Department of the Navy Practice

In the NAVFAC accounting system, land property records are simply removed with no recognition of a gain or loss. An exception is that property records for outgranted land are maintained for all types of outgrants. An outgrant is a use agreement such as a lease and is never considered to be a contract sale.

2. Land Disposition Through Sale

a. Generally Accepted Accounting Principles

The sale of land is recorded at cash received, and the expenses of the sale and any gain or loss on the transaction are recognized /Ref. 43, p. 370/. Any gains are recognized only when they are reasonably assured, usually when title is passed /Ref. 9, p. 15-19/. However, losses attributable to land are usually recognized as soon as the land's carrying value is permanently impaired /Ref. 9, p. 15-8/. An arm's length transaction for consideration less than carrying value is an example.

b. Department of the Navy Practice

The land account is simply deleted from the records with no recognition of a gain or a loss.

3. Land Disposition Through Donation or Transfer

a. Generally Accepted Accounting Principles

Literature coverage of land disposition by donation was not found by the author. It appears likely, based on the accounting concepts of realization and conservatism, that no unrealized gain would be recognized on the donation. In other words, the fair market value of the donated land would not be used, and the book value would simply be eliminated by a debit to an expense item. This elimination, in turn, would reduce the equity of the enterprise.

b. Department of the Navy Practice

Land donations and transfers result in the simple deletion of the asset account /Ref. 36, p. 2-10/.

4. Land Disposition Through Exchange

a. Generally Accepted Accounting Principles

The land account is closed out, recognizing a gain or loss on the difference between the cost of the land and the fair market value of that land or of the asset received /Ref. 43, p. 364/.

b. Department of the Navy Practice

As discussed in Section IV. B. b. 5., exchanges are based on appraised property value for purposes of obtaining an equitable exchange. However, the accounting for the

exchange is as though there were two separate transactions. The land exchanged is simply removed from the property records without recognition of a gain or a loss /Ref. 36, p. 2-10/. The new piece of land is recorded at the historically recorded cost of the land exchanged.

5. Land Disposition Through Outgrant

a. Generally Accepted Accounting Principles

Outgrants, which for the purpose of this thesis are considered to be leases, can be treated in two ways:(1) the financing method or(2) the operating method. These are described in Opinion No. 7 of the APB /Ref. 2, p. 6533/ which deals with the accounting choices of the lessor. The financing method treats the lease as a contract sale with the lease being the contract instrument. This method is used when all or most of the risks and rewards of ownership are passed to the lessee and when the lessor can expect to recover his investment plus a reasonable rate of return. This method is applicable to an enterprise which is not classified as a financial institution only when the above characteristics are met. The operating method is used when the lessor retains the usual risks and rewards of ownership and, perhaps, provides maintenance and services to the leased property.

b. Department of the Navy Practice

With the exception of permanent out-easements, no Navy outgrants are considered permanent /Ref. 36, p. 2-5/. A Navy outgrant could be the conferring of harbor rights to a city, for example. In all cases the property record is maintained, annotated to show that the land has been outgranted. A separate outgrant record is generated /Ref. 36, p. 2-5/. In no case is an outgrant considered to be a disposition.

B. DISPOSITIONS OF CLASS 2 PROPERTY

1. Class 2 Dispositions in General

a. Generally Accepted Accounting Principles

A disposition is generally in the form of a replacement, but not all dispositions involve replacements. A replacement consists of (1) the elimination of the old facility from the records and (2) the acquisition of a new facility /Ref. 9, p. 17-34/as discussed in Chapter IV. A gain or a loss is recognized on the replacement. A final disposition may be the ownership transfer, demolition, destruction, or disuse of a facility /Ref. 9, p. 17-36/. In general disposal costs are expensed and may be considered extraordinary if they are major. Since the various forms of acquisition were discussed in Chapter IV, only the disposition portion of replacement actions will be discussed for that type of disposition.

b. Department of Navy Practice

Since losses and gains are not recognized, replacements are, in effect, two distinct transactions: (1) an acquisition and (2) a retirement. Retirements are by (1) ownership exchange, (2) disaster, or (3) demolition /Ref. 36, p. 2-9/. These retirements are handled by the simple elimination of the property record once official approval for the disposition has been received /Ref. 8, p. 6-42/.

2. Class 2 Dispositions Through Sale

a. Generally Accepted Accounting Principles

For whatever reason an asset is sold, the difference between cash received and the book value of the asset as of the transaction date is recorded as a gain or loss on the sale /Ref. 20, p. 456, and Ref. 43, p. 257/.

b. Department of the Navy Practice

The property record is simply eliminated. There is no recognition of a gain or a loss.

3. Class 2 Dispositions Through Donation or Transfer

a. Generally Accepted Accounting Principles

As for land, no literature coverage of this subject has been located. As discussed earlier in connection with land it would appear that the book value of the asset as of the transaction date would be eliminated and offset

by an expense item which would reduce the equity of the enterprise.

b. Department of the Navy Practice

On the effective date of a donation or a transfer, the property record is simply eliminated /Ref. 36, p. 2-10/.

4. Class 2 Dispositions Through Exchange

a. Generally Accepted Accounting Principles

The old asset account and accumulated depreciation account are eliminated and a gain or loss is recognized as the difference between book value of the old asset and fair market value of the old asset or of the asset received as of the transaction date/Ref. 20, p. 456, and Ref. 43, p. 257/.

b. Department of the Navy Practice

While an exchange is based on appraised value to ensure an equitable trade, no gain or loss is recognized. The old property record is simply eliminated, and the new asset is recorded at the historically recorded cost of the old asset.

5. Class 2 Dispositions Through Demolition or Destruction

a. Generally Accepted Accounting Principles

When a facility has been in use and is demolished, unanticipated retirement losses must be considered

extraordinary /Ref. 20, p. 452/. Removal and demolition costs (less salvage) should be expensed except when an acquisition was with the intention of immediate demolition /Ref. 9, p. 17-35/. When a casualty occurs, assets are written down to recoverable values, and a loss is recorded /Ref. 1, p. 351/.

b. Department of the Navy Practice

Assets demolished or destroyed are simply removed from the accounts. Demolition costs are expensed except when incurred in the course of new construction, in which case they are included as part of the investment cost of the new asset /Ref. 8, p. 6-35/. When casualty occurs, the property record is simply eliminated. Removal costs are expensed.

6. Class 2 Dispositions Through Abandonment

a. Generally Accepted Accounting Principles

When an asset is no longer in use and will not be utilized in the reasonably forseeable future and when the book value is greater than the salvage value, the asset may be written down to salvage value and moved to an "abandoned assets" account. The original asset account and the accumulated depreciation account are closed out. No recognition is made of unrealized gains /Ref. 9, p. 17-36/, but losses are immediately recorded.

b. Department of the Navy Practice

Real property assets remain on the books, whether abandoned or not, until disposed of by any of the preceding methods or by elimination without demolition. Such elimination is called an on-site survey.

7. Class 2 Dispositions Through Outgrant

a. Generally Accepted Accounting Principles

Outgrants (leases) of Class 2 facilities are handled in the same manner as for land.

b. Department of the Navy Practice

Outgrants of Class 2 property are not considered permanent. The facility is treated as still owned. As for land, the property record is annotated to indicate "outgrant," and a separate outgrant record is maintained. Rent, appraised value, and terms of the outgrant are indicated /Ref. 36, p. 2-4/.

C. SUMMARY OF MAJOR DIFFERENCES IN ACCOUNTING FOR DISPOSITIONS

1. Whereas in the private sector realized gains or losses, which may be extraordinary, are always recognized, they are not recognized in the Navy.

2. Whereas in the private sector the disposition process requires the proper elimination of the asset account and the accumulated depreciation account, the process in

the Navy is the simple elimination of the property record from the data base.

3. In the private sector a transaction for a replacement has as integral parts both disposition and acquisition. In the Navy the transactions for acquisition and disposition are separate and distinct in almost every case.

4. Certain outgrants in the private sector are considered to be contract sales. In the Navy all outgrants regardless of duration and terms, remain Navy property.

5. Demolition costs are always expensed in the private sector. In the Navy these costs may be capitalized if the demolition is in conjunction with new construction.

6. An abandoned asset is removed from real property accounts in the private sector, but it is retained in Navy accounts until disposed of by other means.

VII. ECONOMIC ANALYSIS OF REAL PROPERTY INVESTMENTS

A brief description of the planning and programming system in use in the Navy is considered a necessary prelude to the discussion of economic analysis. The basic system of planning and programming for naval shore installations and facilities has four phases /Ref. 38, p. 1/:

Phase I -- Recognition and Identification of facilities requirements based on mission requirements

Phase II-- Analysis of these requirements

Phase III-- Shore Installations and Facilities Planning and Military Construction Programming which results in a construction program

Phase IV -- Budgeting and Execution

The Naval Facilities Engineering Command (NAVFAC) has been directed to exercise the lead responsibility for the above four phases which are collectively known as SIFPPS (Shore Installations and Facilities Planning and Programming System). SIFPPS is "a process by which all new pre M-DAY (a military term for mobilization, non-peacetime activity) construction of shore facilities for the Naval establishment, as well as disposal of all excess facilities including land,

is planned and programmed" /Ref. 38, p. I-1/. For purposes of this thesis, Phase III, which consists of two levels of effort, will be considered. The two levels are (1) the field level and (2) the departmental level. Only the field level will be considered. The field level consists of the individual Naval shore activities such as Naval Air Stations and Naval Shipyards. In addition the Engineering Field Divisions (EFD) of the NAVFAC provide field level support.

From Logistics Support Requirements (LSR) which are field generated and approved by the Chief of Naval Operations (CNO), each shore activity determines its Basic Facilities Requirements List (BFRL) which is quantitative in terms of real property facilities required to satisfy the LSR. The BFRL is unconstrained with respect to existing real property facilities. The BFRL preparation is based primarily on two documents other than the LSR: (1) Category Codes for Real Property, Navy /Ref. 25/ and (2) Facility Planning Factors for Naval Shore Activities /Ref. 29/. A discussion of the departmental level actions is contained in Ref. 34.

In the preceding four chapters, Navy real property accounting procedures have been discussed. All real property (Class 1 and 2), in addition to the accounting values reported, is recorded in detail as to physical characteristics and uses /Ref. 36/. This establishes a complete data base

for all Navy real property. To ascertain the existence and physical condition of this real property a tri-annual engineering evaluation is conducted and is reported in accordance with the FACSO User Manual /Ref. 30/.

A computer generated comparison of the above data base and the BFRL then identifies excesses and deficiencies in real property facilities. This identification is broken down by field activity and is the initial point from which Military Construction (MILCON) projects are generated. This thesis is interested in the economic analysis conducted at the field level on these proposed MILCON projects and on other types of investment proposals concerning real property.

A. ECONOMIC ANALYSIS IN THE DEPARTMENT OF THE NAVY

Economic analysis is primarily generated at the field level. It is, however, intended to be a decision making aid at all levels. It is an integral part of the programming process in support of budget submissions. Primary emphasis is placed on accurate estimation and the presentation of all relevant costs associated with the decision alternatives /Ref. 4, p. 1/. Economic analysis should, however, be used judiciously and should not be used when it can be shown that the minimum level of effort required to do the analysis would not be offset by the benefits gained /Ref. 48, p. 1-1/.

Sunk costs, those for which cash flow has already occurred, are irrelevant in economic analysis. In discussing relevant costs, the Department of Defense outlines those cash flows relevant to real property decisions /Ref. 48, p. 1-2, 3, 4, 5/.

1. investment costs
2. terminal or residual value
3. recurring costs or cost savings

Regardless of the type of economic analysis used, life cycle costs are always considered. Life cycle costs are those relevant costs over the entire economic life of a real property asset. Neither technical nor physical life is implied in the term "economic life." When considering life cycle costs, their present value in a common base year is always calculated. While the federal government does not have a cost of capital in the sense used by private enterprise, dollars invested do reflect private sector opportunities forgone /Ref. 48, p. 5/ and an appropriate discount factor is utilized. Inflation is not considered unless significant and then only in supplemental calculations /Ref. 48, p. 8/.

B. TYPES OF ECONOMIC ANALYSIS

The Naval Facilities Engineering Command has published guidelines for economic analysis of real property investments

/Ref. 27 and Ref. 28/. These guidelines are Department of Defense guidelines adapted to real property investment situations and apply regardless of the situation for which the analysis is required. There are two types of analysis: (1) primary economic analysis and (2) secondary economic analysis.

1. Primary Economic Analysis

Primary economic analysis is utilized when analyzing an investment which would result in a decreased cash outflow. The proposed investment(s) would result in an absolute cost savings over the current mode of operations /Ref. 28, p.2/. The format used by the Navy in conducting a primary economic analysis is contained in APPENDIX C.

2. Secondary Economic Analysis

Secondary economic analysis is utilized when a facility deficiency (a new need) has been identified. It will already have been determined that a real property investment is required. Thus, this type of economic analysis is used to identify the alternative with the least present value life cycle cost. Cash outflows will increase under any alternative; therefore, the analysis will only determine the least costly alternative relative to the other alternatives /Ref. 27, p. 3/. The format used by the Navy for conducting a secondary economic analysis is contained in APPENDIX C.

3. Discussion of the Various Elements of Analysis

While the formats for the two types of analysis differ and the presentations of the results vary, the elements which go into the analysis are the same. A discussion of the various elements based on the Economic Analysis Handbook /Ref. 27, p. 20-30/ follows. These elements will be related to those used in private sector economic analysis.

a. Economic Life

Most economic analysis in the Navy is conducted for alternatives having the same economic life. To preclude the complications which result from alternatives having different economic lives, the NAVFAC has established standard values:

permanent structures -- 25 years

semipermanent structures -- 15 years

temporary structures -- 5 years

Private enterprise generally establishes the economic life for each facility on an individual basis.

b. Interest Rate

All investments in real property are discounted at an annual rate of 10 per cent. A discussion of why the 10 per cent rate is used is contained in the next chapter. The tables used for this were developed by Grant and Ireson

/Ref. 16/. A common method in private enterprise is to discount all investment alternatives at the firm's cost of capital.[1] This value will vary with time and with each new investment decision depending on the sources of capital available.

c. Cost Data

(1) One-Time Cost Elements.

(a) Investment Costs. These costs are nonrecurring but need not all occur in the same period. Examples are acquisition cost, rehabilitation cost, nonrecurring services, and nonrecurring maintenance and operations costs. This practice is consistent with private enterprise.

(b) Working Capital Changes. Working capital represents funds that are tied up as liquid funds or assets on hand or on order. A required inventory level would be classified as requiring working capital. An increase in working capital requirements is an investment cost, and, conversely, a decrease in working capital requirements is an investment saving. This practice is consistent with private enterprise.

(c) Value of Existing Assets Replaced. An asset may be released for use by another activity, but there may be no cash flow even though the receiving activity

[1] For a discussion of the cost of capital see Ref. 13,p.198-202.

benefits. This item, then, represents the fair market value of an asset replaced. It is an attempt to recognize the benefits received by the other activity from existing assets. This item parallels the sale of an existing asset by a private enterprise and is a reduction of investment costs. Demolition of an existing asset (less salvage) is an addition to investment cost.

(d) Value of Existing Assets to be Employed. If an asset already owned by the Navy is to be used and if there will be a cash flow as a result, then the amount of the cash flow is an increase in the investment cost. For example, the sale foregone of an asset is a reduced cash inflow and hence , a cash outflow. On the other hand, if an existing asset is utilized and has no alternative use or no salable value, then no increased investment cost is generated. This appears to be consistent with private enterprise.

(e) Future Terminal Value. This value is the future salvage value of an investment. Whereas in private enterprise, future terminal value is used, if material, and is needed in determining depreciation expense, the Navy takes a different position. At 10 per cent discounted over 25 years, the Navy considers the present effect of salvage value to be negligible, and to begin with, places little stock in the correctness of future terminal value estimates.

(2) Annual Costs.

(a) Personnel Costs. This item is the cost of civilian and military personnel that will result from the investment decision. For civilian labor the figure used is 129.6 percent of direct labor costs. The military labor figure comes from statistical tables. In addition, costs such as those for travel, per-diem, and training are included. This item again appears consistent with private enterprise.

(b) Operating Costs. These costs include materials, supplies, utilities, services, maintenance, repair, and overhead attributable to the investment proposal, and is the same for private enterprise.

(3) Economic Considerations Not Utilized in Navy Economic Analysis. Fremgen /Ref. 13, p. 384, 385/ addresses cash flows with respect to income taxes. Since the Navy does not pay taxes (and does not generate a profit), no cash inflow or outflow results from this consideration. There are three general areas where taxes have an effect on economic analysis in private enterprise:

1. Capital gains and losses on a replacement or retirement of a real property asset are considered in computing taxes. A capital gain is reduced by taxes, and a capital loss results in a lower tax figure. Thus cash flows

as a result of a particular decision are affected by tax treatment of a gain or a loss. The Navy does not consider capital gains or losses.

2. Increases or decreases in annual costs (expenses) are reduced by taxes. For example, at a 50 per cent tax rate, an annual savings of $100 before taxes has only a $50 effect in the analysis. In the Navy the full effect of increases or decreases in annual costs is recognized.

3. Depreciation, while not in itself a cash flow, results in a reduced cash outflow through its tax effect. Depreciation charges are expenses and reduce the taxable base of an enterprise, but this is not so in the Navy.

(4) Relevant Costs. In economic analysis in both the Navy and private enterprise, only relevant costs are considered. A sunk cost, as stated earlier, is not relevant. Relevant costs are those that would occur or would be eliminated by the investment. Relevant costs involve cash flows. In many cases, only the increases or decreases in cash flow are used in comparing alternatives. In fact, unless an absolute value of the life cycle cost of an investment is needed, the incremental costs are all that are required. According to Fremgen /Ref. 13, p. 412/, relevant cash flows are incremental cash flows.

4. Economic Analysis Applied

A comparison by example of economic analysis in the Navy with that in private enterprise based on the foregoing concepts and considerations will be made in the next chapter.

C. REQUIREMENTS FOR ECONOMIC ANALYSIS IN THE DEPARTMENT OF THE NAVY

Although it is suggested that economic analysis be utilized for all investment decisions, it is specifically required only in some situations. These situations are, in general, those where the benefits of the analysis are certain to exceed the costs. The specific requirements listed below are intended to indicate the extent of economic analysis for real property investment decisions in the Navy.

1. All Military Construction (MILCON) projects which are proposed on the basis of absolute cost savings are to be justified by primary economic analysis. MILCON is any construction project with funding requirements in excess of $50,000. /Ref. 37, p. II-5, III-21/

2. All MILCON projects which are proposed on the basis of least relative cost require secondary economic analysis if funding requirements are expected to be in excess of $300,000. /Ref. 28, p. 2/.

3. Once the MILCON alternative (as opposed to lease, for example) has been chosen, it is required to determine the

design with the least life cycle cost. /Ref. 28, p. 3/.

4. A project submitted as urgent minor construction ($50,000 to $300,000) normally requires a certificate of urgency. However, if it can be shown that the cost savings will result in an undiscounted payback period of less than three years (3.53 discounted), no certificate is required. Urgent minor construction is funded from MILCON appropriations but does not follow the normal planning/programming cycle. /Ref. 6, p. 2-7/.

5. Economic analysis is not specifically required for any other real property investment decision.

VIII. THE EFFECTS OF NAVY ACCOUNTING PRACTICE

Chapters III through VI discussed real property accounting differences between private enterprise and the U. S. Navy. Chapter VII discussed economic analysis in the U. S. Navy with reference to similarities to and differences from economic analysis conducted by private enterprise. The intent of this chapter is, then, to look at some possible effects of Navy accounting practice on management decisions. In doing this, comparisons will be made using a Navy manager, a private enterprise manager, and the real property data base that is available to the two individuals. The level of interest of this thesis is the field (lower) level manager, not the Department of the Navy or corporate level.

First, a look will be taken at the presentation of assets as would occur on a balance sheet. Next, accounting data requirements for economic analysis and the possible results of economic analysis in the two sectors will be discussed. Finally, consideration will be given to those decisions in the Navy that require a replacement value.

A. PRESENTATION OF ASSETS

For purposes of this discussion it is helpful to assume that there exists a Navy activity and a private enterprise that were established at the same time and have

similar functions. Let us call these Navy Base and Enterprise. Both would be in similar areas, have equal land area, and have identical Class 2 real property facilities. It is assumed that each parcel of land and each individual facility was acquired by the same general method. Subsequent capital investments, maintenance and repair, and dispositions are assumed to have followed similar patterns at both Navy Base and Enterprise. From this point it is now possible to compare balance sheet presentation of the two activities at different times in their lives.

1. Initial Acquisitions and Their Valuation

At the beginning of the first year — and it is assumed for simplification of the comparison that initial acquisitions were instantaneous — each activity acquired real property facilities as shown in Table I. It is obvious that in reality there would be more acquisitions, but including them would not improve the example. The cost data available for these acquisitions and the subsequent basis for valuation for initial recording purposes are shown in Table II. The valuations shown are the amounts that would be entered in the asset accounts.

While the cost figures and the types of acquisitions used are fictitious, they do point out several differences. In reality the magnitude of these differences might be greater

or lesser, but the author feels the trend would not vary significantly. To start with, possible balance sheet presentations of real property are shown on page 87. While in reality the formats might not be the same, that is not important to this discussion of valuation.

TABLE I. INITIAL ACQUISITIONS OF ENTERPRISE AND NAVY BASE

Item	Description	Acquisition Method
1	Land, 500 acres	Purchase
2	Land, 500 acres	Donation
3	Land, 100 acres	Ingrant
4	Administration Building	Purchase
5	Maintenance Facility	Construction Contract
6	Administration Building	Donation
7	Production Facility	Self-Constructed
8	Production Facility	Ingrant
9	Land Improvements, Paving	Construction Contract

TABLE II: COST DATA AND BASIS FOR VALUATION OF INITIAL ACQUISITIONS

Cost Data and Basis for Valuation	Valuation	
	Enterprise	Navy Base
500 acres of land with an existing building suitable for administration are purchased. The total price paid to the seller is $550,000. Other expenditures necessary to cover title search, survey fees, escrow, etc. total $12,000. Based on fair market values the purchase price is split with $500,000 going to the land and $50,000 going to the building. $10,000 of the other expenditures are apportioned to the land and $2,000 to the building. $10,000 are spent in rehabilitating the building. No assets are removed, and there are no salvage proceeds. Navy Base does not recognize the "other expenditures" as capital items; they are expensed. From the preceding cost data, the initial valuations would be:		
Item 1: Land, 500 acres	$ 510,000	$ 500,000
Item 4: Administration Building	$ 62,000	$ 60,000
Enterprise estimates the life of the building at 25 years and a salvage value of $5,000.		
500 acres of land with another building suitable for administrative purposes are donated by a private individual. There are no contingencies involved. The fair market value of the land is determined to be the same as for the purchased land, $500,000. $5000 in incidental expenditures are prorated to the land donation. The fair market value of the building, based on an independent appraisal, is $250,000.		

TABLE II (continued)

Cost Data and Basis for Valuation	Valuation Enterprise	Valuation Navy Base
$2,000 in incidental costs are prorated to the building. Navy Base records all donations at no cost. The valuations would then be:		
Item 2: Land, 500 acres	$ 505,000	-
Item 6: Administrative Building	252,000	-
The building is estimated to have a life of 25 years and a salvage value of $20,000.		
100 acres of land are ingranted through a 100 year exclusive use lease that is not unilaterally cancellable. Rental payments are to be $5000 per year. It is determined that there is a five percent implicit interest rate in the rent payments. Navy Base recognizes the lease as an acquisition, but records it at no cost. Enterprise calculates the present value of future payments and records the acquisition as a contract purchase. The present value factor for five percent and 100 years is 19.848 /Ref. 16/. This gives a present value of $99,240 ($5000 x 19.848). There are $760 of incidental expenditures associated with the lease. The valuation would then be:		
Item 3: Land, 100 acres	$ 100,000	-
A maintenance facility is acquired through a construction contract at a contract price of $300,000. This building is built on the purchased land which was purchased expressly for the construction. To Enterprise		

TABLE II (continued)

Cost Data and Basis for Valuation	Valuation Enterprise	Valuation Navy Base
all other costs associated with the construction are $30,000. Navy Base constructs the facility through an EFD. SIOH is $18,000 (.06 x $300,000) and other directly attributable costs are $10,000. Navy Base applies the $10,000 costs incidental to the land purchase to the new facility. The valuation of the facility would then be:		
Item 5: Maintenance Facility	$ 330,000	$ 338,000
The facility has an estimated life of 25 years and a salvage value of $30,000.		
A production facility is constructed using the organizations' own personnel. The cost of materials is $100,000. Direct labor cost is $300,000. Increases in overhead directly attributable to the construction are $150,000. SEABEE labor used by the Navy Base had a statistical cost of $300,000. Fair market value of a like facility is $350,000. Enterprise, then, must recognize a loss on self-construction. Navy Base does not recognize the overhead as an acquisition cost. The valuation would be:		
Item 7: Production Facility	$ 350,000	$ 400,000
Life of the facility is estimated at 25 years, and a salvage value of $50,000 appears reasonable.		
Another production facility is ingranted through a lease for 25 years. The lease is not unilaterally cancellable. Enterprise will treat the		

TABLE II (continued)

Cost Data and Basis for Valuation	Valuation Enterprise	Valuation Navy Base
lease as a contract purchase. Explicit interest is six percent. Rental is $10,000 per year. The present value of future payments is $127,830 ($10,000 x 12.783). The present value factor is for 25 years at six percent /Ref. 16/. The valuation would then be:		
Item 8: Production Facility	$ 127,830	-
In addition, $20,000 in leasehold improvements are made.	$ 20,000	-
Both the facility and the leasehold improvements have lives of 25 years, and Enterprise will realize $2,830 in salvage proceeds at the end of the lease.		
Paving of roads and parking areas is accomplished by construction contract. The contract price is $150,000. All other costs are $12,000 for Enterprise, For Navy Base (using an EFD) SIOH is $9000 (.06 x $150,000), and other directly attributable costs are $1000. The valuation is then:		
Item 9: Land Improvements, Paving	$ 162,000	$ 160,000
The improvements are estimated to have a life of 25 years with no salvage value.		

ENTERPRISE
BALANCE SHEET
JUNE 30, 19XX

Land	$ 1,115,000
Land Improvements	162,000
Buildings and Structures	1,121,830
Leasehold Improvements	20,000
Total Real Property	$ 2,418,830

NAVY BASE
BALANCE SHEET
JUNE 30, 19XX

Land	$ 500,000
Land Improvements	160,000
Buildings and Structures	798,000
Total Real Property	$ 1,458,000

At the beginning of the first year of operation, depreciation has not yet accumulated and, thus, is not shown in the above balance sheets.

The obvious point is that the initial valuation of real property assets by Navy Base results in a significant understatement as compared to Enterprise. In reality this understatement might not be as great as in the example, but in almost all cases it would exist. All donations and leases treated as contract purchases result in understatement. Purchases will almost always result in understatement. Acquisitions by construction contract and self-construction will result in understatement, with a few possible exceptions which were shown in Table II. A private enterprise may have to recognize a loss on self-construction,

but, if it does not, its valuation will be the higher, because some overhead is recognized. Finally, leasehold improvements are not capitalized in the Navy; this practice results in an understatement of real property assets relative to private enterprise.

2. Real Property Assets After Five Years of Operations

Still considering the two organizations, Navy Base and Enterprise, let five years of operations occur. During this period, it is assumed that the initial acquisitions were sufficient to meet operating requirements. No disposals of real property occurred. In addition it is assumed that only normal maintenance and repair were performed and that no subsequent capital investments were made. Thus, in presenting the real property assets, only depreciation on Enterprise's assets need be considered. Although choice of depreciation method is a management decision, with different methods being preferable in different situations, straight line depreciation will be used for demonstration purposes. Determination of accumulated depreciation for those assets depreciated is shown in Table III. The balance sheet presentation of Enterprise would then be as follows:

TABLE III: DETERMINATION OF ACCUMULATED DEPRECIATION FOR ENTERPRISE

Determination of Annual Rate		Accumulated Depreciation 5 years	10 years	20 years
Item 4: Administration Bldg.				
Life:	25 years			
Initial Valuation:	$62,000			
Less Salvage:	5,000			
Amt. to Depreciate:	$57,000			
Annual Rate:	$ 2,280	$11,400	$22,800	$45,600
Item 5: Maintenance Facility				
Life:	25 years			
Initial Valuation:	$330,000			
Less Salvage:	30,000			
Amt. to Depreciate:	$300,000			
Annual Rate:	$ 12,000	$60,000	$120,000	$240,000
Item 6: Administration Bldg.				
Life:	25 years			
Initial Valuation:	$252,000			
Less Salvage:	20,000			
Amt. to Depreciate:	$232,000			
Annual Rate:	$ 9,280	$46,400	$92,800	$185,600
Item 7: Production Facility				
Life:	25 years			
Initial Valuation:	$350,000			
Less Salvage:	50,000			
Amt. to Depreciate:	$300,000			
Annual Rate:	$ 12,000	$60,000	$120,000	$240,000
Item 8: Production Facility				
Life:	25 years			
Initial Valuation:	$127,830			
Less Salvage:	2,830			
Amt. to Depreciate:	$125,000			
Annual Rate:	$ 5,000	$25,000	$50,000	$100,000
Item 9: Land Improvements				
Life:	25 years			
Initial Valuation:	$162,000			
Less Salvage:	000			
Amt. to Depreciate:	$162,000			
Annual Rate:	$ 6,480	$32,400	$64,800	$129,600
Leasehold Improvements				
Annual Rate:	$ 800	$ 4,000	$ 8,000	$ 16,000

ENTERPRISE
BALANCE SHEET
JUNE 30, 19XX + 5

Land	$ 1,115,000
Land Improvements (less accumulated depreciation of $32,400)	129,600
Buildings and Structures (less accumulated depreciation of $202,800)	919,032
Leasehold Improvements (less accumulated depreciation of $ 4,000)	16,000
Total Real Property	$ 2,179,632

There is no change for Navy Base.

The obvious point is that, through depreciation, the book value of Enterprise's real property has been reduced, while that of Navy Base has remained the same. If the initial valuation had been the same for both organizations, book value of the Navy real property would be overstated with respect to that of private enterprise. In this example, depreciation on Enterprise's propety will not reduce its book value below that of Navy Base for almost 21 years. The point to be made is that a manager comparing real property assets of a private enterprise and the Navy would be well advised to use historical acquisition cost instead of book value, but he must recognize that Navy assets are originally understated. Considering that many Navy assets are recorded at no cost (leases and donations, for example), any comparison will not be very reliable.

3. Real Property Assets After Ten Years of Operation

After ten years of operation it is assumed that subsequent capital investment and further acquisition has taken place. For simplification, it is assumed that these occur at the end of the ten year period. While this assumption again is not the way things would happen in reality, it does not, for demonstration purposes, detract from the example. Transactions which have occurred are shown in Table IV. Book values--assets are shown parenthetically. The balance sheet presentations of real property assets at the end of ten years would then be as follows:

ENTERPRISE
BALANCE SHEET
JUNE 30, 19XX + 10

Land	$ 1,231,000
Land Improvements (less accumulated depreciation of $64,800)	97,200
Buildings and Structures (less accumulated depreciation of $282,800)	1,071,030
Leasehold Improvements (less accumulated depreciation of $8,000)	12,000
Total Real Property	$ 2,411,230

NAVY BASE
BALANCE SHEET
JUNE 30, 19XX + 10

Land	$ 480,000
Land Improvements	160,000
Buildings and Structures	1,126,000
Total Real Property	$ 1,766,000

TABLE IV: FURTHER ACQUISITIONS AND SUBSEQUENT CAPITAL INVESTMENT AT THE END OF TEN YEARS

Cost Data and Basis for Valuation	Valuation	
	Enterprise	Navy Base
100 acres of land, previously purchased, are exchanged for 80 acres of land with a building which is suitable for administrative purposes. The fair market value of the land traded is determined to be $200,000. $10,000 in incidental costs are incurred. For Enterprise the total acquisition cost is $210,000. This is split with 80 percent going to the land ($168,000) and 20 percent going to the building ($42,000). The historical cost of $102,000 for the land is removed from the asset account, and a gain on the exchange of $98,000 ($200,000 - $102,000) is recognized. While Navy Base agrees that this is an equitable exchange, no funds have been expended, and the new assets are recorded as a percentage of the historical cost of the land traded. The land is recorded at $80,000 (.8 x $100,000), and the building is recorded at $20,000 (.2 x $100,000). The $10,000 in incidental costs are not recognized. The original land account is reduced by $100,000 with no recognition of a gain. The valuations are:		
Item 1: Land, revised to 400 acres	$408,000	$400,000
Item 10: Land, 80 acres	$168,000	$ 80,000
Item 11: Administration Building	$ 42,000	$ 20,000
The building is estimated to have a life of 15 years and no salvage value.		

TABLE IV: (continued)

Cost Data and Basis for Valuation	Valuation Enterprise	Valuation Navy Base
Grading to improve the drainage of the donated land is accomplished. This is considered to be permanent in nature. The cost of grading is $50,000. Enterprise capitalizes this amount and Navy Base expenses it. The revised recorded value of the donated land would then be:		
Item 2: Land, 500 acres	$550,000	-
An addition to one of the production facilities (Item 7) is accomplished by construction contract. The life of the facility is not extended. There are no demolition costs, and no assets are removed. For Enterprise the contract price is $100,000 and incidental costs are $10,000. For Navy Base the contract price is the same, but incidental costs are only $8,000. The new valuation is then:		
Item 7: Production Facility	$460,000 ($340,000)	$508,000
Enterprise will have a new depreciation base for years 10 to 25 on this facility.		
The administrative building, Item 4, is demolished and replaced with a new one by construction contract. The total contract price is $150,000 of which $20,000 covers the demolition and removal costs (less salvage). Incidental costs are $12,000 for Enterprise and $10,000 for Navy Base. Enterprise recognizes a loss on the disposition of the old asset in the amount of its book value. The removal costs of the old asset are expensed. Navy Base recognizes no		

TABLE IV (continued)

Cost Data and Basis for Valuation	Valuation Enterprise	Valuation Navy Base
loss and includes the demolition costs in the acquisition cost. The valuation of the new building would then be:		
Item 12: Administration Building	$142,000	$160,000
The life of the new building is estimated to be 20 years. A salvage value of $22,000 appears reasonable.		
Major repairs are accomplished on the maintenance facility (Item 5) in the amount of $100,000. These repairs do not increase the utility of the facility but do extend the life of the facility an additional 10 years. Enterprise deducts these costs from accumulated depreciation and establishes a new depreciation rate. Navy Base adds the costs to the asset account. The new valuation would then be:		
Item 5: Maintenance Facility	$330,000 ($310,000)	$438,000

The accounting at the end of ten years shows several things. First, continued depreciation by Enterprise has lowered the book values of original acquisitions. However, this reduction has been somewhat offset by the major repair which reduced accumulated depreciation. The land account has increased for Enterprise through recognition of a gain on exchange of land and through a capital improvement on other land. However, the Navy Base land account has decreased since no gain was recognized on the land exchange, and the expenditures to improve the land were expensed. As far as Class 2 property is concerned, the asset accounts for both organizations have increased. However, unlike initial acquisitions, Navy Base has generally overstated the increases relative to Enterprise. A major repair was capitalized, and demolition costs were capitalized by Navy Base. In the two transactions (acquisition by exchange and the addition to the production facility) which were treated as simple acquisitions, Navy Base understated asset value relative to Enterprise. Thus, subsequent capital investments may result in over or understatement of Navy assets relative to the private sector, depending upon the magnitude and the type of the investment. Dispositions will reduce the assets of both types of organizations, but if there is significant accumulated depreciation, the reduction for private enterprise

will be relatively minor. That these differences occur is important for the manager to know.

4. Further Cycles of Operation

While further cycles of operation could be carried out, the author feels the point has been made. The accounting differences between the Navy and private enterprise are significant enough to result in radically different presentations of real property assets by the two types of organizations. If a manager of one uses the accounting data of the other for any purpose, he must recognize these differences or face a possible incorrect conclusion. Navy managers trained in the accounting practice of the private sector must recognize that it is not the same in the Navy and adjust their actions accordingly.

B. ECONOMIC ANALYSIS COMPARISONS

Using the economic analysis methodology presented in the last chapter and economic analysis procedures presented by Fremgen /Ref. 13, p. 412-415/, a look will be taken at how differences in the real property data base of the Navy and private enterprise might affect the analysis results.

1. Choice of Discount Rate

As stated by Stockfisch /Ref. 41, p. 272-2 (4 of 19)/, the discount rate used in analysis of government programs is estimated to be 10.4 per cent. This figure approximates the value, 10 per cent, used by NAVFAC in economic analysis of

real property investments. The choice of this rate is intended to reflect the before-tax rate of return generated by private, physical investment. It, in effect, reflects the opportunity foregone in terms of private investment return when the government utilizes tax dollars in investments of its own. As stated in the previous chapter, private enterprise commonly uses their cost of capital in investment analysis.

2. Accounting Data Requirements

Economic Analysis of replacements or subsequent capital investments (primary analysis) will be considered. The analysis of investment alternatives in those situations where no existing assets are involved (secondary analysis) is generally independent of the real property data base. For the private sector, which depreciates Class 2 real property and pays taxes, the real property data base is used to determine:

1. historical acquisition cost,
2. accumulated depreciation,
3. method of depreciation, and
4. salvage value at the end of the real property's economic life.

The Navy, which neither depreciates nor pays taxes, has no need for the first three of the above data items. The Navy does need terminal salvage value. However, terminal salvage

value is not contained in the real property records and must be estimated at the time of the analysis.

3. An Example to Compare Economic Analysis Methods and Results

The intent here is not to evaluate the capital budgeting process but to look at the economic analysis of a single investment proposal. One could assume the Navy does depreciate real property and does pay taxes, but that would not provide a true comparison. What would be better is to look at the way an analysis is done in the Navy through an example. Then, using the Navy example, a synthesis of the economic analysis that would have been carried out by private enterprise will be made. This synthesis will take into account not only the real property data base, but tax effects on depreciation and gains or losses, and the effect of taxes on operational expense savings or cost increases.

a. The Navy Example

From Economic Analysis, Problems and Solutions /Ref. 41/ an example considering the modernization of a mess hall (cafeteria) is chosen. The problem and its solution are presented in APPENDIX D. Briefly, the investment proposal is to modernize a mess hall which will reduce personnel and operating costs. In addition, a portion of the existing mess hall

will be released for other functions. It is anticipated that the net investment cost will be more than offset by the net present value of savings in personnel and operating costs. This anticipated result, in fact, turns out to be the case. A ratio of savings to investment costs of 1.10 results. Therefore the Navy would recommend the investment on the basis of financial savings without even considering non-quantifiable benefits such as improved morale.

b. The Private Sector Synthesis

This investment proposal could possibly come up in a corporation which provides cafeteria service to its employees. For purposes of the example, the enterprise's cost of capital will be assumed to be 10 per cent. Any discount rate above 7 per cent will not change the unprofitability result of the analysis. Additionally it is assumed that the existing tax rate is 48 per cent of before-tax income. The relevant synthesized data would then be as follows. Data that are changed from the Navy example or are provided in addition to the Navy example will be followed by an "(S)."

1. Economic life of the investment: 25 years

2. The investment would result in a $16,000 per year reduction in personnel costs and a $4,440 per year savings in operating costs.

3. The incremental salvage value of the new investment over the present condition would be $45,000 at the end of 25 years.

4. The excess area released by the modernization, 7400 square feet, will be used for storage and will reduce other investment expenditures by $81,400. This saving is assumed to be amply justified, based on financial benefits.

5. The investment cost is $262,000 plus an additional $10,000 (S) in overhead not recognized by the Navy.

6. The current salvage value of the cafeteria is $35,000 (S). From the real property accounts, it is determined that the cafeteria has been depreciated to its current salvage value (S).

7. The book value of assets removed (building appurtenances) is determined to be $5,000 (S) from the accounting records.

8. The new historically recorded cost is then $302,000 (S) ($262,000 + $10,000 + $35,000 - $5,000). It is assumed that none of the $35,000 book value of the present cafeteria is allocated to the warehouse area.

9. The amount to be depreciated is then $257,000 (S) ($302,000 - $45,000). The annual straight line depreciation rate is $10,280.

The results of the analysis are shown in Table V. In this example the results of the analysis have been reversed. The net present value of the savings is less than the investment cost. The ratio of the savings to investment costs is only 0.80, and the investment would not be undertaken solely on the basis of economic considerations. It should be remembered here that economic analysis is only an aid to the decision maker in any situation. Non-economic considerations might far outweight the negative cash flow.

What caused this reversal, and need it always be the case? First, the reversal was a combination of several factors.

1. The personnel and operating savings were reduced by taxes.

2. The saving from the tax effect of depreciation was less than the above reduction.

3. Net investment was greater due to recognized overhead costs.

Reversal need not always be the case; other examples would show reinforcement of Navy analysis. Still others could yield similar results on either a positive or a negative cash flow basis, but they might yield substantially different savings/investment ratios. The results would possibly affect capital budgeting decisions. Other examples might show tax

TABLE V

ANALYSIS OF PROPOSED CAFETERIA MODERNIZATION

Item		Cash Flow Before Tax	Tax Effect	Cash Flow After Tax	Present Value Factor*	Present Value
Cash Inflow:						
Incremental Personnel Savings		$ 16,000	$ (7,680)	$ 8,320	9.524	$ 79,240
Incremental Operation Savings		4,440	(2,131)	2,309	9.524	21,991
Incremental Tax Savings from Depreciation		-	4,934	4,934	9.524	46,991
Incremental Salvage Value		45,000	-	45,000	0.097	4,365
						$152,587
Cash Outflow:						
Construction	$(262,000)					
Overhead	(10,000)					
Warehouse Saving	81,400					
Net Investment	$(190,600)	(190,600)	-	(190,600)	-	$(190,600)
Net Present Value						$(38,013)

$$\frac{\text{Savings}}{\text{Investment}} = \frac{\$152,587}{\$190,600} = 0.80$$

* Present value factors are for 10 per cent and come from Ref. 27.

effects of capital gains or losses which could have negating or reinforcing effects.

4. Conclusions From the Economic Analysis Example

What is apparent is that Navy economic analysis is really not comparable to that of the private sector. While the use of the real property data base has something to do with the differences, it surely is not the most significant factor. Although an attempt has been made to neutralize tax effects through an interest rate reflecting before-tax returns of private enterprise, it is not complete. The depreciation tax effect is not accounted for nor is the tax effect of gains and losses. Besides that, the Navy discount rate is based on an entirely different concept than cost of capital.

C. OTHER APPLICATIONS OF THE NAVY REAL PROPERTY DATA BASE

It has been shown that the Navy real property data base is not used in economic analysis of investment proposals. It is, however, used for facilities planning as was described in Chapter VII, but this use is not of the accounting data but of the physical characteristics data. In fact, in Chapter III it was pointed out that the vast majority of information contained in the real property data base pertains to physical characteristics. Where the accounting data do come into the picture is in fulfilling of what the author considers to be the Navy's two primary requirements of the Real Property Inventory (RPI):

1. to meet statuatory requirements and

2. to provide responsive output in the form of reports and records.

The first requirement is met by the second, but the second goes beyond the first requirement by supporting Shore Facilities Planning. The second requirement is met through many report formats, a few of which are listed below.

1. NAVFAC P-77, Inventory of Military Real Property /Ref. 33/.

2. NAVFAC P-164, Detailed Inventory of Naval Shore Facilities /Ref. 26/

3. NAVFAC P-319, Statistical Tables of Military Real Property /Ref. 39/

4. Reports to the Government Services Administration (GSA) of Navy controlled government owned and leased real property.

5. The individual property records, ingrant records, and outgrant records.

It should be pointed out here that the above reports all contain the same data, which have been compiled in different formats for different purposes. In addition, many special purpose one-time reports are possible /Ref. 35, p. E-10/. The major use of these reports, it seems, is to provide statistics on how much the Navy owns of what

type of property and where it is located. The primary use of the accounting data portion of the reports appears to be in the generation of Current Plant Value (CPV). The determination of CPV was described in Chapter III, Section D.2, in the discussion of "replacement value." The terms are synonymous in the Navy. CPV figures, either directly or indirectly, enter into several areas requiring management decisions, including maintenance budgeting, repair or capital improvement decisions, and allowable funding levels for subsequent capital investment.

1. The Real Property Data Base and Maintenance Budgeting

NAVFAC uses the Backlog of Essential Maintenance and Repair (BEMAR) to support maintenance budget requests. BEMAR is used as an indicator of real property condition. In simplified form, it is a listing of all unfunded maintenance and repair projects which need to be accomplished. Morrison provides a complete discussion of BEMAR in his Master's Thesis /Ref. 23./. While BEMAR itself is not derived from accounting data, it is compared to the CPV which is derived from accounting data. The greater the difference between BEMAR and 1/4 of 1% of CPV, the greater the pressure for increased maintenance funding.

There are several problems with this system, not withstanding its current lack of credibility, as discussed by Morrison /Ref. 23, p. 41/. First, the 1/4 of 1% of CPV is based on purported industry standards of maintenance

expenditures. Ross, in an industry survey, found no such standard and recommended: "NAVFAC should refrain from using so called 'industrial standards or averages' in support of this budget request for maintenance" /Ref. 46, p. 88/.

Second, NAVFAC could justify even higher maintenance budget requests. Further explanation is first necessary. The 1/4 of 1% of CPV figure, if funded annually, is supposed to keep pace with maintenance and repair dollar requirements. Thus, this figure would always be equal to the BEMAR. At present, BEMAR is increasing faster than the CPV /Ref. 23, p. 2/. This condition results in the lack of credibility mentioned above. Perhaps, as contended by Ross, the Navy should not use fallacious "industry standards." On the other hand, a possible solution lies in the real property accounting practices of the Navy.

As was demonstrated in the first section of this chapter, the Navy almost certainly undervalues its acquisitions and subsequent capital investments, relative to private enterprise. In this case the CPV of an industrial firm's assets would be greater than that of Navy assets on a facility-for-facility basis. The author then contends that, if NAVFAC maintains that 1/4 of 1% of CPV is an industry standard, then the Navy should use a higher percentage. This approach would come closer to industry comparability and would

provide the basis for increased budget requests. This approach could possibly, then, result in a future steady relationship between CPV and BEMAR.

Another area of concern is that of the allocation of maintenance dollars to the various activities. For a period prior to 1967, NAVFAC was the single executive (budgeting and allocation) for maintenance funds. At present the major claimants are responsible for the allocation. However, NAVFAC still acts in an advisory capacity and uses CPV and BEMAR as a basis for budget allocation recommendations /Ref. 23, p. 36/.

What concerns the author here is that the valuation of Navy real property assets is not consistent from facility to facility, from station to station. This inconsistency results from the many methods of acquisition which result in different bases of valuation. Therefore, if it is assumed that two similar activities have valued their assets using the same bases, errors can result. One activity could have valued its real property much higher than the other. The computed values of CPV for one would be higher than for the other. Both would have the same maintenance requirements (assuming facilities were in the same condition and had similar utilization), but, on the basis of CPV, one would receive a higher allocation than the other. Recognizing the

shortcomings of this allocation method, NAVFAC is currently developing a maintenance budgeting system based on accumulated historical cost data /Ref. 36, p. 2-24/.

2. The Real Property Data Base and Repair or Capital Improvement Decisions

The funding for restoration of damaged facilities may be from MILCON funds or repair funds (O & MN). To qualify for MILCON funding, a project must be a complete replacement or a major restoration. A major restoration is defined as one having costs in excess of 50% of CPV /Ref. 6, p. 2-3/. Since acquisition costs and subsequent capital investments are understated, CPV is also understated. This understatement in turn lowers the cutoff point for O & MN funding for restoration required as a result of damage to facilities.

3. The Real Property Data Base and Limits on Subsequent Capital Investment

According to a NAVFAC source /Ref. 21/:

> OSD /Secretary of Defense/ uses an unofficial rule of 75% of replacement cost /CPV/ when reviewing MCON /MILCON/ improvements other than family housing. This can be exceeded in special cases.

The above quotation means that subsequent capital investments are limited by the CPV, which has already been shown to be understated. Recognition of this understatement could

possibly ease the cost limitations and allow accomplishment of otherwise justified projects.

IX. SUMMARY AND CONCLUDING REMARKS

A comparison between Navy real property accounting practice and generally accepted accounting principles has shown that significant differences exist. These differences can be material and can have an effect on the Navy manager and his decisions. Specific major differences are listed at the end of Chapters III through VI. The impact of these differences will be briefly discussed.

Initial valuation of Navy real property assets almost always results in an understatement with respect to the private sector. Relative overstatements are not common, and the magnitude is not great. Subsequent capital investments may understate or overstate Navy real property assets. However, there appears to be a trend towards an overall understatement of subsequent capital investments. The continuing nature of acquisitions by far negates any pressure from overstated subsequent capital investments to move Navy real property valuation towards that of the private sector. Navy accounting procedures for dispositions would appear to overstate real property holdings, in that the private sector will remove certain assets from their real property accounts, and the Navy does not. However, the magnitude of this overstatement does not appear to be great.

Given that the trend in the Navy is to understate real property assets with respect to the private sector, any decisions by the Navy based on replacement value and industry standards would be in error. This situation was presented as a possible explanation of the failure of the Backlog of Essential Maintenance and Repair (BEMAR) to reflect accurately the maintenance funding requirements of the Navy. Other difficulties arise in maintenance budget allocations, decisions on choices of fund source, and approvals of subsequent capital investments.

An example of economic analysis of an investment decision by both the Navy and the private sector resulted in two different decisions. The example does not show, however, that one is right and one is wrong. That investment decisions are based on different requirements and different data is apparent, but both approaches meet the requirements of the user. Except to show that analysis results may be different, the two approaches are not comparable.

The intent of this thesis has not been to show that Navy real property accounting practice is wrong but to show that it does not conform to generally accepted accounting principles. This difference has been shown, and some possible effects have been considered. The perception that no differences in accounting exist is apparent even at high management

levels. This situation leads the author to believe that accounting differences and their effects should be made known to all Navy managers. This knowledge would put management decisions in the proper perspective which could have possible positive impact on future human or monetary resource allocation.

APPENDIX A

GLOSSARY

accumulated depreciation - For purposes of this thesis, accumulated depreciation is the total of all depreciation charges on a real property asset as of the date of the transaction being considered.

appraised value - Appraised value of a real property asset is its current dollar value which is determined by an independent third party. Appraised value is an indicator of fair market value, but the two need not be equal.

basket acquisition - A basket acquisition is the acquisition of a "mixed aggregate of property...for a lump-sum cost." /Ref. 44, p. 229/

beneficial occupancy date - The beneficial occupancy date occurs when a construction contract is complete to the point that the facility can be used and enjoyed to a substantial extent.

book value - The book value of a real property asset as of a given date is the valuation of the asset in the plant account less accumulated depreciation as of that date.

capital budgeting - "The problems and procedures associated with the planning of long-term capital investments are popularly referred to as capital budgeting." /Ref. 13, p. 202/

casualty - For purposes of this thesis, a casualty is damaged real property as a result of a disaster.

Class 1 real property - Land.

Class 2 real property - Class 2 real property is improvements to land in the form of buildings, structures, and utilities.

construction - "Construction is the erection, installation, or assembly of a new real property facility; the replacement of an existing real property facility;

or the relocation of a real property facility from one installation to another." /Ref. 4, p. 3-1/

cost of capital - Cost of capital may be specific or average. This thesis is concerned with the average cost of capital which is "...an average of the specific costs, weighted by the respective market values of the total capital provided from each source." /Ref. 13, p. 202/

current plant value - This term is used in the Navy as a synonym for replacement value. Current plant value is the present cost that would be incurred in replacing a facility with one of like utility and of the same construction.

data base - Data base is a term commonly associated with a computer-oriented management information system. It refers to the total data that is available for management use within the system.

disaster - A disaster is an occurrence (natural or man-occasioned) which damages real property beyond that level normally expected in routine operations.

discount rate - The discount rate is "...the interest rate used to discount or apply the time value of money to future costs and benefits so as to arrive at their present values." /Ref. 28, p. A-1/

economic life - Economic life is "...the period of time over which the benefits to be gained from an investment may reasonably be expected to accrue to the Department of Defense." /Ref. 28, p. A-1/

ingrant - An ingrant is a method of acquiring the use of real property through a use agreement such as a lease. Compensation (rent) may or may not be paid. Other common terms are right-of-way and permit.

lessee - A lessee is the party who gains rights to the utilization of real property through a lease.

lessor - A lessor is the party who confers rights to the utilization of real property through a lease. The lessor, for accounting purposes, may or may not retain ownership of the real property.

life cycle cost - Life cycle costs are those relevant costs (reductions in cost) that are expected to occur over the economic life of a real property facility.

lower of cost or market - This is a concept reflecting conservatism in generally accepted accounting principles. An asset is recorded at the lower value of cost or fair market value.

maintenance - "The recurring day-to-day, periodic, or scheduled work required to preserve or restore a real property facility to such a condition that it may be effectively utilized for its designated purpose is defined as 'maintenance'." /Ref. 4, p. 5-1/

outgrant - An outgrant is the granting of rights to real property utilization through an agreement such as a lease.

payback period - The payback period is the length of time required for an investment cost to be recovered through cost savings which result from the investment. A payback period may be discounted or not.

primary economic analysis - "A primary economic analysis is one employed to help determine whether an existing situation or procedure should be changed in some way to take advantage of dollar savings available through some other situation or set of procedures." /Ref. 28, p. 1/

real property - Real property is all land, buildings, structures, and utilities.

relevant costs - "A relevant cost is one which will be affected by a decision among alternatives." /Ref. 13, p. 29/

repair - "Repair is the restoration of a real property facility to such condition that it may be effectively utilized for its designated purposes by overhaul, reprocessing, or replacement of constituent parts or materials that have deteriorated by action of the elements or usage and have not been corrected through maintenance." /Ref. 4, p. 4-1/

secondary economic analysis - "A secondary economic analysis is one which is used once a deficiency or changed

requirement has been identified to determine which of two (or more) alternatives would most economically satisfy the deficiency." /Ref. 28, p. 2/

subsequent capital investment - Subsequent capital investment is a phrase used in this thesis to indicate any capital expenditures associated with real property already acquired.

sunk costs - "A sunk cost is one which is incurred simply as a consequence of a prior investment of capital; it requires no current outlay." /Ref. 13, p. 32/

survey - A survey is a formal method of property disposition which is used by the Navy.

useable completion - This term is similar to beneficial occupancy. Useable completion occurs when an activity has started operating a facility, even though the facility may not have been completed.

APPENDIX B

LIST OF ACRONYMS

AAA	Authorized Accounting Activity
AICPA	American Institute of Certified Public Accountants
APB	Accounting Principles Board
BFRL	Basic Facilities Requirements List
CPV	Current Plant Value
EFD	Engineering Field Division
FACSO	Facilities Support Office
GAAP	Generally Accepted Accounting Principles
LSR	Logistics Support Requirements
M-DAY	Mobilization Day
MILCON	Military Construction (funds)
NAVFAC	Naval Facilities Engineering Command
NCF	Naval Construction Force
NFA	Naval Facilities Assets
non-MILCON	non-Military Construction (other funds)
OICC	Officer in Charge of Construction
PWO	Public Works Officer
RPI	Real Property Inventory
SFP	Shore Facilities Planning
SIFPPS	Shore Installations and Facilities Planning and Programming System
SIOH	Supervision Inspection and Overhead

APPENDIX C

FORMATS FOR NAVY ECONOMIC ANALYSIS
FORMAT FOR PRIMARY ECONOMIC ANALYSIS*

ECONOMIC ANALYSIS/PROGRAM EVALUATION
SUMMARY OF COSTS FOR
FORMAT A-1

1. Submitting DoD Component:_____

2. Date of Submission:_____

3. Project Title:_____

4. Description of Project Objective:_____

5a. Present Alternative:_____ 6a. Economic Life:_____

b. Proposed Alternative:_____ b. Economic Life:_____

7. Project Year	8. Recurring (Operations) Costs		9. Differential Cost	10. Discount Factor	11. Discounted Differential Cost
	a. Present Alternative	b. Proposed Alternative			
1.					
2.					
3.					
25.					
12. TOTALS					

*From Enclosure (1) to Ref. 46.

SUMMARY OF COSTS FOR ECONOMIC ANALYSIS
PROGRAM EVALUATION STUDIES
FORMAT A-1

13. Present Value of New Investment:

    a. Land and Buildings _____
    b. Equipment _____
    c. Other (identify nature) _____
    d. Working Capital (Change-plus or minus) _____

14. Total Present Value of New Investment (i.e., Funding Requirements). _____

15. Plus: Value of existing assets to be employed on the project. _____

16. Less: Value of existing assets replaced. _____

17. Less: Terminal Value of new investment. _____

18. Total New Present Value of Investment. $_____

19. Present Value of Cost Savings from Operations (Col. 11) _____

20. Plus: Present Value of the Cost of Refurbishment or Modifications Eliminated. _____

21. Total Present Value of Savings. $_____

22. Savings/Investment Ratio (Line 21 divided by Line 18). _____

23. Rate of Return on Investment. _____

FORMAT FOR SECONDARY ECONOMIC ANALYSIS*

SUMMARY OF COSTS FOR ECONOMIC ANALYSIS/
PROGRAM EVALUATION STUDIES
FORMAT A**

1. Submitting DoD Component:_____

2. Date of Submission:_____

3. Project Title:_____

4. Description of Project Objective:_____

5. Alternative:_____ 6. Economic Life:_____

	8. Program /Project Costs					
7. Project Year	a. Non-Recurring R&D	a. Non-Recurring Investment	b. Recurring Operations	c. Annual Cost	d. Discount Factor	e. Discounted Annual Cost
1.						
2.						
3.						
.						
.						
.						
.						
25.						
9. TOTALS						

10a. Total Project Cost (discounted) _____
10b. Uniform Annual Cost (without terminal value) _____
11. Less Terminal Value (discounted) _____
12a. Net Total Project Cost (discounted _____
12b. Uniform Annual Cost (with terminal value) _____

*From Enclosure (1) to Ref. 46.
**Complete for each investment alternative.

APPENDIX D
EXAMPLE OF PRIMARY ECONOMIC ANALYSIS CONDUCTED BY THE NAVY*

MESS HALL MODERNIZATION
U. S. NAVY BASE, ANYWHERE

Background

The U. S. Navy Base, Anywhere is required to provide adequate messing facilities for bachelor enlisted personnel assigned to the base and its resident commands. The present building interior and surroundings are not conducive to the habitability expexted in a dining facility. Mechanical, structural, and electrical component exposures present unsightly appearances. Floors are of bare concrete. Equipment is outdated and the number of breakdowns is beyond the level normally expected. The building lacks air conditioning and adequate ventilation.

The proposed MILCON project includes interior modernization, air conditioning and other related items to improve the efficiency and utilization of the mess hall. It is expected that this modernization may generate O&M cost savings to the Navy, as well as increase the general morale of the men stationed on base. If this project is not undertaken, management and operational efficiency will be impaired, thus contributing to low morale and expected increased operations cost.

RELEVANT DATA

Economic Life: 25 years

Present Situation

1. Personnel Cost: Current expenses for civilian messmen amounts to $80,000 per year. This includes all help in the dining room, dishwashing area, and kitchen. This level may be expected to remain constant over the next 25 years.

2. Operating Costs: O&M costs are based on a composite rate of $0.60/sq.ft./year (this rate includes electric power, A/C and ventilation, water and sewage, steam, and maintenance charges). The area of the existing buildings is 18,000 sq. ft.

3. Overhead Costs: See Proposed Situation.

4. Terminal Value: As the existing facility is already over 25 years old, it is assumed that at the end of another 25 years the facility will have a negligibly small terminal value. In all probability this small value would be offset by expected demolition charges; hence, terminal value of the existing facility may be considered zero.

Proposed Project

1. Investment Cost: The project consists of installing partitions, a new suspended ceiling, new floor tile, new lighting, air conditioning, substation and new galley and serving line equipment. On the basis of an extensive engineering evaluation, the following cost estimates were derived:

a.	Primary Facility Cost	$225,000
b.	Supporting Facilities	37,000

2. Personnel Cost: The arrangement and semi-automated quality of the new equipment in the proposed project will allow a reduction in the contractual services of civilian messmen. The reductions will be possible in the dining room, dishwashing area, and the kitchen. Total annual personnel costs will be reduced to $64,000 per year.

3. Operating Costs: Rearrangement of the equipment lay-out under the proposed project will permit reduction of usable mess hall area to 10,600 square feet. The remaining space will be used for storage and will require O&M costs of only negligible size. The same rate ($0.60/sq.ft./year) used in the present situation applies.

4. Overhead Costs: The level of overhead will remain the same for the mess hall whether or not this modernization project is undertaken. Therefore, it may be disregarded in this analysis.

5. Terminal Value: A study has been conducted at U.S. Navy Base, Anywhere to determine the relationship between initial investment cost and terminal value of facilities whose economic lives have expired, but which still have substantial physical lives remaining. By applying the results of this study to the case at hand, it has been determined that the terminal value of the modernized mess mess hall at the end of its economic life will be $45,000.

6. Value of Existing Assets Replaced: The storage area gained (see item #3) is currently valued at $11,00/sq.ft.

General Comments

1. All modernization investment costs are incurred during FY '75. (year Ø)

2. Recurring costs will be incurred from FY '76 to FY ØØ, inclusive. (years 1-25)

3. All computations should be made in terms of today's (non-escalated) dollars.

4. Value of Existing Assets Employed is the same for both alternatives (i.e., the fair market value of the existing mess hall now in FY '75) and thus may be disregarded in the analysis.

---

*Excerpted from PROBLEM #18, Ref. 41.

MESS HALL MODERNIZATION
U.S. NAVAL BASE, ANYWHERE

Project Year	Cost Element	Recurring Costs		Differential Savings (Pres-Prop)	Discount Factor	Discounted Recurring Savings
		Present Alternative	Proposed Alternative			
1976-2000	Personnel Costs	$80,000	$64,000	$16,000	9.524	$152,000
1976-2000	Operating Costs	10,800	6,400	4,400	9.524	42,000

Total Discounted Recurring Savings	$194,000
Total Discounted Savings	194,000
Proposed Investment Cost (FY '75)	$262,000
Value of Existing Assets Replaced (FY '75) (7400 sq. ft. x $11.00/Sq. ft. = ($81,000)	$(81,000)
Present Value of Terminal Value of Modernized Facility ($45,000 x 0.097 = $4,000	$(4,000)
Net Investment Cost	$177,000

Savings/Investment Ratio (SIR) = $\frac{194,000}{177,000}$ = 1.10

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